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MUSEUM OF ZOOLOGY, UNIVERSITY OF MICHIGAN, NO. 106

## **The Mammals of Iraq**

BY  
**ROBERT T. HATT**  
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ANN ARBOR  
MUSEUM OF ZOOLOGY, UNIVERSITY OF MICHIGAN  
February 12, 1959

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## THE MAMMALS OF IRAQ\*

### INTRODUCTION

THIS report places on record the results of an investigation which I conducted in Iraq from October, 1952, into March, 1953, under the auspices of the United States Educational Foundation of Iraq ("Fulbright Foundation"). It also lists all mammals for which I can discover reports, past or present, for Iraq, the neighboring shaikhdom of Kuwait, and the waters of the upper end of the Persian Gulf. Some species have been included which, by misinterpretation of evidence or by reason of human transport, have figured in Mesopotamian history. I have made this report broadly inclusive in the hope that it will thus be of greater use to zoologists and archeologists whose investigations in the Middle East are concerned with both domestic animals and wild species. I have also included vernacular English and Asiatic names to the extent that I have discovered them, in those languages likely to be encountered in field work. Insofar as possible I have identified in the gazetteer all Iraqi localities mentioned in the literature on mammals. Since these sites have often been obscure and unidentified by the authors, I have spent much time in localizing them.

A manuscript which I have in preparation deals more generally, and in nontechnical style, with the mammals of the same area.

The present publication is, however, more than a record of my own findings and a checklist of the mammals of Iraq, for it also includes new material from Dr. Charles A. Reed and Dr. Lee Merriam Talbot, unpublished at the time of this writing.

Dr. Charles A. Reed of the University of Illinois School of Pharmacy was in Iraq in 1954 and 1955 to obtain bones of animals from archeological digs and to collect skeletons of modern mammals to be used as standards for identifying the remains of past faunas. He prepared notes on living animals and with great generosity turned them over to me for inclusion in this report. Dr. Reed was working under a grant of the National Science Foundation and with the Oriental Institute of the University of Chicago. To him and to his sponsors I owe very special thanks.

Dr. Lee Merriam Talbot visited Iraq briefly in 1955 under the auspices of the International Union for the Protection of Nature to inquire into the status of certain disappearing large mammals. He has given me a few hitherto unpublished records for inclusion. For these, too, I have reason to be grateful.

The survey of the literature is as complete as I could make it, insofar as the technical literature of mammalogy is concerned. The bibliographies of Allouse (1954) and Field (1953b, 1955a, 1956a) have, of course, been helpful. There are undoubtedly a great many scattered records in

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\*Accepted for publication November 27, 1956.

the accounts of early travelers and in archeological publications that would extend the record of the time and place at which some of the larger mammals occurred. Whenever such leads gave promise of adding something significant to the easily accessible record, they were followed. The report does not summarize all known information on these mammals. Greatest emphasis is given to vanishing mammals and to little-known records; the bibliography adequately guides the reader to other data. The most significant additions to our knowledge will come, however, not from a further examination of library resources but from industrious collecting of living animals and of animal remains in geological or archeological deposits. It will be surprising indeed if additional living species are not soon found by others, particularly near the frontiers. Thus, among rodents, it is likely that *Mesocricetus*, *Eliomys*, *Dryomys*, and *Glis* may be found. The porpoise and whale have not yet been collected and identified. A reduction in the number of species listed here may come about when the gazelles and cats are adequately collected and studied, but this must be done soon or it will be too late.

#### Acknowledgments

Field work in Iraq can entail the co-operation of many persons and agencies and, although it is not feasible to mention here all those individuals who aided the project in one way or another, there are some whose assistance was of such an order that the work could not have been accomplished without their help. Mr. Bashir Allouse, Director of the Iraq Natural History Museum, not only made the original suggestion that I come to Iraq to study, but provided working space and the use of an institutional field car and other equipment, and assigned members of his staff to work with me in the field. Dr. Abdul Aziz Duri, Dean of the College of Arts and Sciences, gave fine support throughout this program.

My field associates, Messrs. J. A. Johnson, Nuri Mehdi, Munir Banni, all of the Iraq Museum, and Mr. William Edward Bermingham, have my warm appreciation for their interest and help.

I am especially indebted to the Honorable Burton Yost Berry, then United States Ambassador to Iraq, and Dr. Charles Kenneth Snyder, who was Cultural Affairs Officer, United States Embassy, for their continued interest in the project and for the very fine quality of the assistance they provided.

Persons who gave notable assistance to the field program include Mr. Robert Angorly of Maqil, Mr. Khalid Chorbachi of Mansuriya al Shatt, and Shaikh Baba Ali of Sulaimaniya. During 1953 Dr. C. A. Hubbard secured a number of mammals in Iraq which he submitted to me for identification and which are herein reported.

I am pleased to thank the officials of Iraq Petroleum Company for providing facilities in the field which made work in their areas not only

possible but comfortable, and Chrysler Corporation for the loan of a field car.

Dr. Charles A. Reed, of the University of Illinois, read and helpfully discussed most of this manuscript with me, and Dr. Robert Braidwood, of the University of Chicago, reviewed several points of question. Mr. Munir Bunni assisted materially in reducing the number of errors in interpretation and transcription of Arabic animal names. Dr. Allen Belden and others of the Office of Geography, U. S. Department of the Interior, aided in identifying some obscure localities.

To those who helped to put this manuscript in order, Jean L. King, Margaret C. Fletcher, and the late Emmy Irene Hesz, I am deeply indebted.

Map 1 was drawn by W. A. Brudon of the University of Michigan.

Pleasure and gratitude are combined in acknowledging the good assistance of my wife, Suzannah, both in field work and in preparation of the manuscript of this report. She did not hesitate to travel with me through areas where other colleagues declined to go, nor did she shrink from the arduous task of checking this technically detailed document.

Above all, I am indebted to the Trustees of Cranbrook Institute of Science for granting me leave for the work in Iraq, and for supporting the preparation of this manuscript.

#### Methods and Standards

Collecting was done by the use of Museum Special snap traps, larger rat traps of similar type, a few gopher traps, and Sherman live traps. Hunting with guns was conducted by day and, where conditions permitted, at night with headlights. We did not organize hunts for large game other than pig. Hunters and small boys were rewarded for specimens, and several public-spirited citizens brought or sent specimens to us in the interests of the Iraq Natural History Museum. A few native skins were secured from markets. A bird net was occasionally stretched for bats, but without reward.

Identifications were made in Baghdad when it seemed feasible to work from literature available there, but several skins and skulls were taken to London, Washington, Chicago, and Ann Arbor for more critical determination.

The inconsistency of the systems of measurement employed in this work may seem indefensible, but a flexible standard was consciously adopted for the convenience of most of the readers of this report.

Land surface distances are given in kilometers since that is the standard in Iraq. Conversion to miles may be made by dividing the number of kilometers by 1.61. Altitudes are given in feet, as they are in the literature and on the most-used maps. To convert to meters multiply by .305. Rainfall is given in inches. To convert to centimeters multiply by 2.5.

Animals are measured in millimeters, weighed in grams.

Measurements were made in the standard manner: total length, tail, hind foot, and ear from notch — although in this report, head and body length, obtained by subtraction, is given as the more useful form. Weights were taken for some specimens prepared in Baghdad.

I have employed in the body of the text those geographic names which are most generally found on current English language maps, in railroad timetables, and in the literature on Iraq. The gazetteer at the end of this report includes the transliterations adopted by the U. S. Board on Geographic Names and also gives other spellings frequently encountered.

## MESOPOTAMIA

### The Land

Iraq, created as an independent nation in 1921 from three former vilayets (provinces) of the Ottoman Empire, Mosul, Baghdad, and Basra, was long known as Mesopotamia, "The Land Between the Rivers." This name was usually applied to the steppes and river lands, including the lower Karun valley, which lie east of the Euphrates escarpment that marks the limit of the western deserts. Modern Iraq does not include the Karun, but does embrace to the west a large area of desert and to the north and east a part of the arc of the Zagros Mountains. From the northern border to the Persian Gulf, Iraq measures some 600 miles and in its greatest breadth 450 miles. In altitude it grades from sea level to peaks as high as 14,000 feet. The greater part of the country is, however, low and flat.

Three natural physiographic regions are recognized in Iraq: (1) the eastern section of the Arabian plateau which forms the deserts of the west and south, (2) the valleys of the Euphrates and Tigris which, between the Arabian and Iranian plateaus, slope from the highland of Asia Minor to the Persian Gulf, and (3) the arc of the Zagros Mountains through which the Turkish and Iranian boundaries run. The areas differ considerably in their history, populations, and land use.

*Region 1.* — About one-third of Iraq's 116,000 square miles is desert. This land provides little in the way of food resources except for the ephemeral flora which follows the spring rains. The surface varies from coarse rocky soil to fine, wind-blown sand. Over a great part of the land an automobile may move at the driver's will, unimpeded by irregularities of the surface.

*Region 2.* — This region may be subdivided into the delta lands, Al Jazira or the land between the Tigris and Euphrates above Baghdad, and the Assyrian plains and foothills. The northern section embraces considerable relief and includes some dry steppelike country suitable for grazing and some farming land without irrigation. Below the Jabal Hamrin, a transverse low range cut by the Tigris at Fatala Gorge, the country is exceptionally flat. The central plain is composed of river-borne soil; the remnants of large irrigation canals here attest forty centuries of widespread cultivation in soils which are often no longer suitable for agriculture. Within this province are the sites of the ancient cities of Sumer,

Agade, and Babylon. Between Baghdad and Basra extensive floodlands occur; Aqar Quf, Hor al Hawaiza, and Hor al Hammar are some of the areas that grade from lake to marsh. The waters of the Euphrates, the Tigris, and the Karun from Persia, their lower courses lined with extensive date orchards, join to form the Shatt al Arab which empties into the Persian Gulf at Fao. The broad salt flats and silt shores of the Gulf are uninhabited.

*Region 3.*—The mountains begin where the sedimentary rocks have been tightly folded into high ridges. As the great Zagros arc they extend from Anatolia southeastward to the Karun valley and in their highest points attain altitudes of 12,000 to 14,000 feet—authorities differ as to just how high. The highest summits within the confines of Iraq appear to be in eastern Erbil Liwa, but faunally this is of less significance than that alpine conditions are attained within or just beyond the frontiers over much of the chain. The lower mountains tend to be devoid of trees, but the intermediate slopes are covered by open oak stands or pine forest. Winters are severe, and the upper mountains carry a blanket of snow throughout the winter.

For a more complete account of the physical geography of Iraq the reader is referred to Lyde (1933: 268-90), to Field (1940, 1949), and, if he can find a copy, to the excellent volume prepared for the British Admiralty by Mason (1944).

#### The Climate

The climate of most of Iraq is characterized by a hot dry summer and a cool rainy winter. Summer heat is extreme; daytime shade temperatures of 110° to 120° F. are normal in July and August. The mean minimum temperature for August in Baghdad is 92° the mean maximum, 110° Northwest winds prevail in the summer and frequently bring severe dust storms, lasting a few hours or days. In the mountains the summer temperatures are moderate, but winter comes earlier there and the higher mountains of Mosul and Erbil liwas are blanketed with snow from mid-November until March. In the more humid region near the Gulf, winters are warmer and frost is unknown.

Precipitation in the mountains is heavy and becomes progressively less the farther the area is from the mountains, until a minimum is reached in the deserts of the south and east. Average annual rainfall at Halabja is 43.3 inches; Diyana, 41.4; Sulaimaniya, 32.7; Kirkuk, 16.5; Mosul, 13; Basra, 8.7; Rutba, 6.6; Baghdad, 5.5; Hilla, 3.9. The rains, which begin in October and end in May, are intermittent, and in the area of Baghdad there are many rainless days and even rainless weeks during this season. But rains are sometimes torrential and may cause extensive flooding and interruption of surface travel. Major travel routes, where not yet paved, are often impassable in the winter. Winter rains fill desert depressions with water; the wadis may carry torrents, while the rain runoff, when coupled with the melting of mountain snows, causes the rivers to rise and in many places to flood. The swamps then greatly increase in

size. Highest water levels are from March to June; the lowest are in October.

### Forests

Forests are limited to the Kurdish hills and mountains. For the greater part these are open oaklands with junipers and other associated trees. They are regularly trimmed for fuel and none of those which I have seen present an unmodified appearance. Over vast areas the forests have completely disappeared, and the only evidences of their earlier presence which remain in these barren hills and plains are a few old trees in cemeteries or other holy places. Ainsworth, who visited northeastern Iraq in 1837, noted with surprise (in Chesney, 1868: 501) how little timber there was near Sulaimaniya — and this of plane trees only. Today there are no trees within sight of the city except on guarded plantations, in gardens, or near holy places. Now, as in Ainsworth's time, logs from the hills are floated down the Great Zab to Baghdad. Away from the hills no forest trees are to be found, except in such artificial stands as the casuarinas near Basra.

In a few restricted areas in Mosul and Erbil liwas there are stands of pine. One such stand, quite dense in character, was seen at Zawitha on the road between Mosul and Amadiya. The extent to which dense mountain forests were at one time more widespread is apparently unrecorded. On Chesney's Map No. 6 (1850) one notes along the Tigris, 37 miles south of the mouth of the Great Zab, the designation "large forest." That area is unforested today. Along small streams in the hills one sometimes finds dense growths of plane and other trees.

### The People

The 1957 census of Iraq gave a population of 6,538,109 persons, an increase of almost two million in ten years. Of the 1947 population of 4,799,500, an estimated 3,750,000 were Arabs; 600,000, Kurds; 150,000, Iranians; 130,000, Jews; and 120,000, Christians. A survey of 1943 showed about three-fifths of the population living in cities, towns, and agricultural communities; the remainder were nomadic Bedouins or tribesmen. Baghdad with its suburbs had, in 1957, 1,306,604 people. The 1957 figures were not completely available to me at the time of going to press. In 1947, Baghdad, Mosul, Basra, Muntafiq, Amara, and Diwaniya liwas had over 300,000 persons each. Dulaim, in 1947, had the lowest population of any liwa, with 193,294 persons. The greatest density of population outside the cities is in the irrigated agricultural lands. Vast areas of Iraq have no permanent human habitation, since there are no reliable food or water resources in these deserts.

### Historical Sketch

The story of the mammals of Iraq is so intimately associated with human history and with the historic records of the mammals so often referred to in these pages that a brief outline of history is offered here as point of reference to this data. The earliest human camps in Iraq are too early to be dated by means of radiocarbon technique which begins in usefulness at 34,000 B.P. (Before Present). Carbon-determined dates are established for several sites, however, and tie in with the king lists of Hammurabi which are internally consistent but floating in time. Evidence of radioactive carbon favors a late starting point for these lists in relation to some dates proposed. Within the last two thousand years historically established dates are accurate enough.

"Human" occupation of Iraq may date back as much as 500,000 years, but the earliest evidence of man's presence comes from Paleolithic deposits of caves in the Zagros highlands. The oldest site, Barda Balka, was a hunter's camp where hand axes of Acheulean and Mousterian types and other flint tools were associated with elephant and rhinoceros remains. This site is believed to be approximately 100,000 years old (R. Braidwood, 1952, 1954a), contemporaneous with the very beginning of the last (Würm) of the four stages of the Pleistocene (Wright, 1952: 12).

Shanidar Cave (Solecki, 1955) yielded evidence of the existence of an early Upper Paleolithic population which, by radiocarbon dating (Rubin and Suess, 1955), is from 34,000 to 24,500 years old. The caves of Hazar Mard near Sulaimaniya (Garrod, 1930) were occupied over 25,000 years ago (Libby, 1955), and Zarsi cave was also occupied by hunters of deer, gazelle, and goat (Bate, 1930a, b), though possibly more recently.

The world's earliest evidence of incipient agriculture and animal domestication comes from the Palestine area where chipped flint sickles imply at least reaping and perhaps cultivation. Only the dog was certainly domesticated (Garrod and Bate, 1943), though possibly the goat was in managed flocks (Vaufrey, 1951). Remains of oxen and pig from this time and area were of animals domesticated or potentially domesticable. Of the excavated sites in Iraqi Kurdistan, only Karim Shahir represents this Mesolithic stage of civilization (R. Braidwood, 1951b). The bones of an equid and of sheep, goat, and pig may indicate that domestication had begun here.

The earliest well-marked "Neolithic" Iraq village site is that of Jarmo on the Chamchamal plain east of Kirkuk (R. Braidwood, 1952, 1954a, b; Braidwood and Braidwood, 1950, 1953). Its inhabitants cultivated wheat and barley, and the incidence of age groups in animal bones that have not as yet been adequately studied suggests possible domestication of goats. Perhaps dogs too were domesticated. Radiocarbon dates for the early village range from 9040 to 7950 years ago, and give a mean date of 6500 B.C. No animal remains have been described for the slightly later sites of Hassuna and Tell Halaf (circa 5200-5000 B.C.). This was a relatively dry postglacial period (Wright, 1952: 12).

The first town that can be classified as a market town with temples was at the site of Tepe Gawra, Mosul Liwa (Speiser, 1935; Tobler, 1950).

Charcoal in contact with painted pottery of Ubaid type yielded a date of 3445 B.C. (Libby, 1955). In southern Iraq, the site of Al Ubaid (Hall and Woolley, 1927) had a long history and, in predynastic times, had a painted pottery which serves to identify this time period. A First Dynasty temple at Al Ubaid is dated about 2900 B.C. From this site was recovered that now famous mosaic which shows cattle being milked.

The Sumerian civilization of the lower river valleys was characterized by large temple cities. Here were new political aspects to culture. The Sumerians developed writing and made prime contributions in architecture, science, law, religion, war, and civil organization. Foreign trade was extensive and — except for mud — almost everything of which they fabricated objects came from other regions. Figurines of monkeys and hill animals attest the importation of living things. Domestic cattle, sheep, and goats were kept and the onager was broken to harness.

The city of Ur (Woolley, 1934), which is frequently mentioned in this report, was inhabited at the time of the making of early Al Ubaid pottery, but the period of its greatness was from about 3000 to 1925 B.C. The royal tombs, which contained animal figures and animal skeletons, are dated approximately 2700 B.C. Farther up the rivers was the Kingdom of Akkad. About 2500 B.C. Sumer and Akkad formed a great nation containing such city-states as Eridu, Lagash, Uruk (Erech), Agade, and, most interesting to us because of animal records or dates, Ur, Nippur, and Kish. Farther to the north at the site of Tel Asmar, a city of the Early Dynastic Period on the Diyala plain, an excellent collection of animal bones was obtained and carefully studied by Hilzheimer (1941). The evidence concerning animals from this period comes largely from pictures on seals, pottery, and other art media, and from bones recovered from the excavations.

Babylon, which was until about 2200 B.C. an obscure village, was built into a great capital by Hammurabi of the Amorite dynasty. Invaded in turn by Hittites and Kassites, the city declined in importance from 1750 to 750 B.C., to be ultimately destroyed about 606 B.C. by the northern Kingdom of Assyria, which had been growing in strength for 750 years.

The third and fourth millenia B.C. have been divided into periods which are occasionally referred to in the following report. These are, in stratigraphic sequence:

2000 B.C.	First Babylonian Dynasty
2025-2125	Ur Dynasty III
2125-2325	Agade-Gutian Period
2325-2425	Protoimperial time
2425-2775	Early Dynastic III
2775-2900	Early Dynastic II
2900-3100	Early Dynastic I

In the north, beginning in the second millennium B.C., the Assyrian Empire developed great cities such as Nineveh, Korsabad, and Caleh (Nimrud), in which the Assyrians left abundant written records and sculptural representations of their lives which also shed light on contemporary animal life. The horse was introduced into Iraq in this time. In war and

in the chase its service as a steed or in hauling chariots added to the effectiveness of the Assyrians in the military conquest of their neighbors and in the decimation of populations of large animals. The Assyrian domination reached its culmination between 1000 and 612 B.C., a time of relatively moist climate (Wright, 1952: 12).

The Chaldeans, a tribe from the region of the Persian Gulf, encroached for several centuries on the Assyrian Empire, and eventually helped to end Assyrian domination. The Chaldeans then rebuilt Babylon for a brief period of glory (612-539 B.C.) under Nebuchadnezzar. But this kingdom in its turn fell to Cyrus, the Persian, in 539 B.C. A Greek army made a brief expeditionary conquest (chronicled by Xenophon), and Alexander later placed Babylon under Greek rule.

Subsequent history, until the period of zoological collecting, is not relevant to this report since there is in this time, so far as I know, no correlation with animal history.

#### BIOTIC PROVINCES OF IRAQ

The area with which this report deals is politically established; its borders follow the crests of mountain ranges, bisect desert areas, and follow river channels. The mammals of Iraq do not recognize the political boundaries as barriers, and indeed their ranges rarely conform even to the physiographic regions defined above. The biotic provinces which individual species or the faunas recognize have not been defined, except for the river valleys south of Mosul. Buxton and Cheesman (Ticehurst, Buxton, and Cheesman, 1921: 213-17) have proposed and described eight zoogeographic "divisions" for the alluvial Mesopotamian plains and two for the higher lands of the upper valleys. As background for their reports on birds this is a good classification. For the Mesopotamian plain these divisions are:

1. Sea coast and mud banks at the mouth of the Shatt al Arab at Fao
2. Edge of the Syrian and Arabian Desert which lies on the right bank of the Euphrates and the Shatt al Arab
3. Permanent marsh and reed areas, and temporary marsh
4. Date and fruit gardens
5. Corn [grain] lands
6. Rivers and low scrub jungle along the banks
7. Uncultivated land beyond the irrigated area
8. Towns and buildings

For the area upriver from the alluvial lands, Buxton and Cheesman proposed two divisions:

1. Undulating tableland
2. Foothills of the mountains: 900 to 1,500 feet, from Mosul to Ahwaz

For use in identifying specialized faunas within Iraq I suggest a different classification, which is geographically more extensive than the classification of Buxton and Cheesman and which is not identical with the

physiographic regions defined above. Within each of the biotic provinces listed below are wide-ranging species which do not remain within the limits, and there is probably no species with a range coinciding precisely with the limits of a province. Probably the only species of mammals found in all provinces are wolf, jackal, pig, and man. We know too little about the ranges of the bats to know which of them, if any, are so cosmopolitan.

The mammalian fauna is basically Palearctic, and many genera and even species are shared with northern Europe. Examples are a hedgehog, wolf, red fox, bear, marten, otter, badger, lynx, pig, wild cattle, bison, sheep, goats, squirrels, beaver, jerboas, and three species of deer. Indian and African elements are the house shrews, leopard, lion, mongooses, bandicoot-rat, and gazelles.

I propose the following classification of biotic provinces for Iraq. The list includes the principal habitats within these provinces and the mammals that occur therein. Species now extinct in Iraq are marked with a dagger (†).

MARINE. The Persian Gulf.

Open waters.

*Megaptera novaeangliae* Delphinid sp.

Tidal flats.

None

ALLUVIAL PLAINS AND THEIR WATERWAYS. This province extends from the Persian Gulf up the Euphrates to Hit, on the Tigris to Samarra, and on the Karun to Ahwaz. Altitude 0-600 ft.; temperature range 19°-130° F. Inhabitants include Fellahin Arabs, Swamp Arabs, and townsmen. Species, wide-ranging or with ecological distribution not determined, include:

*Crocidura suaveolens*

*Eptesicus nilssonii*

*Rhinolophus hippocideros*

*Pipistrellus rüppelli*

*Eptesicus nasutus*

*Otonycteris hemprichi*

*Eptesicus walli*

*Felis libyca*

Lakes and reed beds, permanent or temporary. Extensive thickets of the giant reed *Phragmites communis* grow to a height of 25 ft.

*Pipistrellus rüppelli*

*Lutrogale perspicillata*

*Canis lupus*

*Sus scrofa*

*Lutra lutra*

Riverine thickets. Dense growth, particularly in the river bends, of acacia, tamarisk, poplar, licorice, and bramble.

*Hemiechinus auritus*

*Sus scrofa*

*Canis aureus*

*Lepus europaeus*

*Herpestes auropunctatus*

*Gerbillus cheesmani*

*Felis chaus*

*Tatera indica*

†*Panthera leo*

*Meriones crassus charon*

Uncultivated lands. These usually bear little vegetation, except as they may be reverted irrigated lands. A category of land particularly favored by the mammals is the old canal banks and sites of ruins which provide well-drained den sites.

*Taphozous kachhensis*

*Lepus europaeus*

*Canis lupus*

*Hystriz indica*

*Canis aureus*

*Jaculus jaculus*

*Vulpes vulpes*

*Mus musculus*

*Meles meles*

*Nesokia indica*

*Herpestes auropunctatus*

*Gerbillus dasyurus*

*Hyaena hyaena*

*Gerbillus cheesmani*

*Sus scrofa*

*Tatera indica*

*Gazella subgutturosa*

## Field crop lands.

<i>Canis aureus</i>	<i>Mus musculus</i>
<i>Vulpes vulpes</i>	<i>Tatera indica</i>
<i>Herpestes auropunctatus</i>	<i>Meriones crassus</i>
<i>Lepus europaeus</i>	

## Date and fruit orchards.

<i>Hemiechinus auritus</i>	<i>Herpestes auropunctatus</i>
<i>Suncus murinus</i>	<i>Rattus rattus</i>
<i>Canis aureus</i>	<i>Rattus norvegicus</i>

## Buildings and towns.

<i>Taphozous kachhensis</i>	<i>Canis aureus</i>
<i>Rhinolophus hipposideros</i>	<i>Rattus rattus</i>
<i>Asellia tridens</i>	<i>Rattus norvegicus</i>
<i>Eptesicus nilssonii</i>	<i>Mus musculus</i>
<i>Eptesicus sodalis</i>	<i>Nesokia indica</i>
<i>Pipistrellus kuhli</i> and probably most bats listed for Iraq	

**SOUTHWESTERN DESERTS.** The line of demarkation between the deserts and the steppes or agricultural lands is often ill-defined. This listing, however, pertains primarily to the Arabian and Syrian deserts on the right of the Euphrates and the Syrian Desert in lower Al Jazira. Within the area, distribution of the species is related to the availability of food, water, and soil suited to burrow construction. Altitude 0-2,500 ft.; annual precipitation 4-8 in. The Bedouins are the only year-round inhabitants; the Shamiya shepherds move onto the desert fringe as spring vegetation permits. Species include:

<i>Pipistrellus kuhli</i>	† <i>Oryx leucoryx</i>
<i>Canis lupus</i>	<i>Gazella</i> spp.
<i>Vulpes vulpes</i>	<i>Lepus arabicus</i>
<i>Vulpes rüppelli</i>	<i>Allactaga euphratica</i>
<i>Fennecus zerda</i>	<i>Jaculus jaculus</i>
<i>Mellivora capensis</i>	<i>Gerbillus dasypurus</i>
<i>Hyaena hyaena</i>	<i>Gerbillus cheesmani</i>
<i>Felis libyca</i>	<i>Tatera indica</i>
<i>Felis caracal</i>	<i>Meriones libycus</i>
<i>Acinonyx jubatus</i>	<i>Meriones crassus</i>
† <i>Equus hemionus</i>	

**ASSYRIAN PLAINS AND FOOTHILLS.** Undulating uplands, gravel steppes, rich plow-land, and rocky hills. Included are the greater part of Al Jazira and the country between the Tigris and the mountains. Altitude 600-1,000 ft.; temperature range 12°-100° F.; annual rainfall 8-20 in. Residents are Shamiya and Fellahin Arabs, Nestorians ("Assyrians"), Chaldeans, and townsmen. Species, wide-ranging or of unknown habitat, include:

<i>Taphozous kachhensis</i>	<i>Vormela peregusna</i>
<i>Asellis tridens</i>	<i>Hyaena hyaena</i>
<i>Tadarida teniotis</i>	

## Rivers and marshlands.

<i>Lutra lutra</i>
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## Riverine thickets.

Same species as in this habitat in Alluvial Plains Province.

## Rocky hills and wadis.

<i>Paraechinus aethiopicus</i>	<i>Vulpes rüppelli</i>
<i>Rhinopoma hardwickei</i>	<i>Hystrix indica</i>
<i>Canis lupus</i>	<i>Tatera indica</i>
<i>Canis aureus</i>	<i>Meriones crassus</i>

## Plains.

<i>Canis lupus</i>	<i>Mellivora capensis</i>
<i>Canis aureus</i>	<i>Meles meles</i>
<i>Vulpes vulpes</i>	† <i>Equus hemionus</i>
<i>Vulpes rüppelli</i>	<i>Gazella subgutturosa</i>

## Cultivated lands.

<i>Hemiechinus auritus</i>	<i>Canis aureus</i>
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## Buildings and towns.

No records

KURDISH MOUNTAINS. 1,000-14,000 ft.; annual rainfall 20-44 in. Residents are Kurds, Yezidis, Turks, Persians, and Nestorians. Forest zone, extending from 2,000-14,000 ft. elevation, an open oakland, with maple, hawthorn, juniper, pistachio, and wild pear as associated trees. Aleppo pine sometimes occurs from 2,500-4,000 ft., and may form dense stands (as at Zawitha). Many of the slopes are unforested today. Streams are bordered with poplar, plane trees, and dense thickets of underbrush. Wide-ranging species, or species with local distribution unknown, include:

<i>Erinaceus europaeus</i>	<i>Capreolus capreolus</i>
<i>Eptesicus serotinus</i>	<i>Gazella</i> spp.
<i>Pipistrellus kuhli</i>	<i>Capra hircus</i>
<i>Miniopterus schreibersi</i>	<i>Ovis orientalis</i>
<i>Felis lynx</i>	<i>Apodemus sylvaticus</i>
<i>Panthera pardus</i>	<i>Cricetus migratorius</i>
<i>Sus scrofa</i>	<i>Meriones persicus</i>
<i>Dama mesopotamica</i>	<i>Elobius lutescens</i>
† <i>Cervus elaphus</i>	<i>Microtus socialis</i>
Pine forest.	
Unknown.	
Oaklands.	
<i>Canis lupus</i>	<i>Lepus</i> sp.
<i>Canis aureus</i>	<i>Sciurus anomalus</i>
<i>Vulpes vulpes</i>	<i>Spalax ehrenbergi</i>
<i>Ursus arctos</i>	<i>Apodemus mystacinus</i>
<i>Martes foina</i>	<i>Apodemus flavicollis</i>
<i>Capra hircus</i>	<i>Meriones blackleri</i>
<i>Ovis orientalis</i>	<i>Microtus irani</i>
Mountain streams and marshes.	
<i>Crocidura leucodon</i>	<i>Microtus irani</i>
<i>Apodemus flavicollis</i>	
Caves.	
<i>Myotis myotis</i> and, undoubtedly, many other bats.	
Cultivated lands.	
<i>Crocidura leucodon</i>	<i>Apodemus flavicollis</i>
<i>Canis aureus</i>	<i>Meriones blackleri</i>
<i>Spalax ehrenbergi</i>	<i>Microtus irani</i>
Alpine (above 6,000 ft.).	
<i>Ursus arctos</i>	<i>Capra hircus</i>
<i>Sus scrofa</i>	<i>Ovis orientalis</i>

## STUDY OF IRAQ MAMMALS

### Pre-Linnaean Records

The knowledge of Iraq's mammalian fauna stems from several sources: the findings of archeologists, the observations of early Western explorers, and the discoveries and documentation of systematic zoological collecting.

The first listing of animals of Iraq are Tablets 13 and 14 of the Series Har.ra reported by Landsberger (1934) and Oppenheim and Hartman (1945). These documents, copies of Babylonian originals of about 1600 to 1500 B.C., were obtained at Assyrian sites. They give Sumerian ideograms and equivalent Akkadian names for wild and domestic animals. Most of these animals are identifiable, but the lists are of little value to the zoogeographer since only the name is given. It is remarkable that Landsberger was able to identify the garden dormouse and the hamster on the basis of the names.

Other early writings cut in stone or impressed in clay provide an interesting record of some of the larger mammals. These records chiefly concern the royal hunts which, continued over at least two thousand years, helped to bring about the early extinction of several species. Some of these records are found in the annals of the kings of Assyria. The hunting prowess of Assur-nasir-pal II (884-859 B.C.) and something of his interest in game herds is, for example, told in the following record (Budge and King, 1902: 201-5) interpreted from the Black Obelisk of Nimrud (ellipses indicate obliterated passages; *asâte* and *sen kurri* are unidentified wild animals):

... and a dolphin, a creature of the sea, I received. At that time great and small beasts, together with their tribute, I received from them. Unto my land of Assyria I brought them, and into the city of Caleh. Their herds in great numbers I caused to bring forth, and the peoples of all my land I caused to behold them. By my stretched-out arm and through my furious courage, 15 mighty lions from the mountains and the woods in my hand I captured; and 50 lion cubs I carried away, and in the city of Caleh and in the palaces of my land in cages I set them, and their cubs in abundance I caused them to bring forth... alive in my hands I captured and herds of wild oxen and elephants and lions... and birds, and male and female... beasts and wild asses, and gazelles, and stags, and *asâte*, and panthers, and *sen kurri*, all the beasts of the plain and mountain in my city of Caleh I collected and the people of all my land I caused to behold them... Thirty elephants with... I slew and 250 mighty wild oxen in my hunting [?] chariots [and by my lordly attack with weapons I laid low, and 370 mighty lions, like caged birds with... weapons I slew].

Even before the Assyrians left such records, however, the artists engraved in stone or painted on pots pictures of mammals which were of significance to them and these pictures help us reconstruct the fauna of the past. There are numerous publications interpreting such pictures; among the more comprehensive are those of Elizabeth VanBuren (1939) and William Houghton (1876, 1877).

#### Post-Linnaean Records

William Francis Ainsworth, who was a member of the Euphrates Expedition of 1835-37 (Ainsworth, 1838, 1842, 1888; Chesney, 1850, 1868), published the first annotated list of mammals of the Mesopotamian region in his little-known 1838 report. I do not know whether any of his records are substantiated by existing specimens, but he did mention obtaining certain species, or having failed to do so. Because he traveled this land at a time when the onager and the lion were still extant, his meager notes have unusual interest. Chesney (1850) also published a list of mammals of Mesopotamia but it is not in useful form since his records for Iraq are confused with those for Arabia. Schmarda's zoogeography of 1853 provided a listing of mammals of Mesopotamia. Although he did not note his authority for the listing, it was surely Ainsworth, for Schmarda gave no species not noted by Ainsworth, though a few of the latter's records were omitted, possibly on the grounds of editorial doubt.

After Schmarda's list no general work on the mammals of Iraq ap-

peared until 1891 when Constantine Metaxas, who lived in Baghdad for ten years, published an annotated list of mammals, both wild and domestic. A pamphlet by Norman Kinnear entitled *Notes on the Animals of Mesopotamia* was issued by the Bombay Natural History Society in 1916. Mr. Kinnear wrote (*in litt.*, May 18, 1955), "The pamphlet was prepared for members of the Society, who were on active service, as the Society received many letters from members asking about mammals, birds, etc. Please understand that the notes were got together at odd times, since I was very busy as Intelligence Officer to the Bombay Brigade and adjutant of the Bombay Volunteers." The only copy of this work which I succeeded in locating was the author's last copy, and this he had the kindness to lend me. Because of its rarity I have deposited photographic copies in the museums at Baghdad, Bombay, and Ann Arbor.

The Hofmuseum of Vienna sent an expedition to Mesopotamia in 1910 and many biological reports were subsequently published, but so far as I know, the only paper on mammals to result from the expedition was that on bats published by Wettstein in 1913.

Although earlier records are useful we had no comprehensive knowledge of the mammals of Iraq until members of the Mesopotamian Expeditionary Force (1915-19), under the urging of the Bombay Natural History Society and with the guidance of Kinnear's pamphlet, collected specimens in the course of the military campaign. Some 34 officers and men secured 259 mammal specimens and a fund of useful data on distribution and life histories which was published by Cheesman (1920) and Pitman (1922). This collection contained fauna from the lowlands from Samarra southward but, except for marten, wild sheep, and goats obtained in adjacent Persia, did not include the highland fauna.

According to Aharoni (1930: 331), there are important series of Mesopotamian cats in the Museum of Zoology of Hebrew University at Jerusalem. There may be other pertinent specimens there, but they do not seem to be reported in the literature. Aharoni collected an onager in eastern Syria in 1903; perhaps cats and other mammals were obtained in or near Iraq on this expedition. Henry Field and his associates, while conducting anthropological investigations in Iraq in 1925-28, 1934, and 1950, obtained a good group of bats and mammal skins and skeletons, chiefly of large species. Many of these specimens are from the mountainous areas where no collecting had been done before. Some records are reported by Sanborn (1940, 1956) and Field (1951). Neal A. Weber of Swarthmore College made a small but interesting collection of mammals while in Iraq from 1950 to 1952, and has published (1955) notes on the insectivores and bats.

My own stay in Iraq began October 14, 1952, and continued, with the exception of a few days, to March 13, 1953. During this period I was chiefly in Baghdad, but as conditions permitted I made collecting trips through the several geographic provinces from the Zagros Mountains, close to the Turkish and Iranian borders, to the alluvial flats and deserts bordering Kuwait and the Persian Gulf. This itinerary is described in the gazetteer of this report and my route is given on the map.

In August, 1953, and, excepting eight months, until March, 1955, David L. Harrison collected in Iraq. He was in the Amadiya region of Kurdistan;

in central Iraq, including southern Al Jazira as far north as Samarra, Wadi Tharthar, and the Euphrates from Hit to about fifty miles south of Al Falluja; and in the Syrian Desert west to Rutba and the frontier of Syria in the northwest. He also obtained specimens from the Shuaiba area of southern Iraq.

Charles A. Reed of the University of Illinois collected mammals in 1954 and 1955, chiefly in Kurdistan, in the course of his studies of the larger mammals in relation to early human occupation of Iraq. A part of his results are published herein, as indicated in the pertinent places. Some notes on his collecting may be found in a 1954 report by Robert Braidwood, and other reports are expected to follow. My thanks are due Philip Hershkovitz of Chicago Natural History Museum for an opportunity to examine the specimens collected by Reed.

The collections of anyone, no matter how persistent and skilled he may be, will be only partly representative of the fauna as a whole because of the rarity and elusiveness of some species. My own collections reflect the season and brevity of my stay (October to mid-March). In this season many of the small mammals have retired to their dens, for food and cover are then at a minimum. Winter snows in the mountains and rains in the lowlands made many areas inaccessible at times and for part of this period unfavorable political conditions restricted travel and banned the carrying of firearms.

Despite these factors we added seven species to the recorded mammalian fauna of the country, some of which Harrison has since reported, and there is little doubt that anyone devoting more time to the mountains will find still other species.

The data in Table I, which gives a comparison of the record of four collections from Iraq, indicate the selectivity of collecting techniques. Domestic forms are omitted here, but commensals are included. Species extinct before 1900 are not included. Subspecies are treated as individual taxa.

TABLE I

A Comparison of the Record of Four Collections of Mammals of Iraq

Group	Chessman (1920)	Sanborn (1940)	Hatt Coll. 1952-53	Harrison (1956a-c)	Known Total
Insectivores	4	1	4	2	7+
Bats	8	6	3	8	14
Carnivores	9	12	12	1	24
Ungulates	4	3	1	?	9+
Hares	1	1	1	?	2
Rodents	11	2	16	12	27+
Total	37	25	37	23+	83+

### Bones from Archeological Sites

Animal bones in great numbers have been reported in association with archeological material at many sites, but only a few have as yet been identified (*e.g.*, Bate, 1930*a*, *b*; Pocock, 1934*a*; Amschler, 1937; Hilzheimer, 1941; Lawrence, 1956). Bones from Paleolithic sites may be expected to yield important information about the early fauna of Iraq and the environmental conditions existing at that time. The history of the domestication of several species will be better understood when such collections have had adequate study. A great handicap to such studies is the rarity in museum collections of skeletons of the western Asiatic breeds of modern domestic animals, with which early material can be compared. Robert and Linda Braidwood (1950) found that most of the species represented by animal bones recovered at Jarmo, an early village site near modern Chamchamal, were either domesticated or potentially domesticable. By radio-carbon evidence, these deposits date from 5270 to 4630 B.C. Snails recovered in the deposits suggest open grasslands nearby. The region today is devoid of trees.

Bones of animals recovered by Henry Field from a den near Haditha have been reported by Barbara Lawrence (1956). This collection contains a very large quantity of bones of domestic animals and a few bones of wild species and is mostly of recent date. There is one deer fragment, though this region has no deer at present. I can only surmise that the animal, as carrion, floated down the Euphrates from the highlands where deer still occur today, or that the fragment dates to a time when the Euphrates valley near Haditha was lined with trees among which the fallow deer might have lived. It seems strange that the lot did not also contain specimens of the onager, which must have been common in the area.

### Collections

The collections of Iraq mammals are widely scattered. Except for the Types, which were held in London, the collections reported by Cheesman (1920) are in Bombay. The British Museum has secured other Iraq specimens from varied donors. David Harrison's specimens (1956) are in his private collection, in Sevenoaks, Kent. Field's specimens (Sanborn, 1940) are in the Chicago Natural History Museum, where Charles A. Reed has placed his collection also. The United States National Museum has a few specimens from Neal A. Weber (1955) and others. In the Hofmuseum of Vienna there are specimens obtained by its 1910 expedition (Wettstein, 1913). The Museum of Zoology of the University of Michigan has a representative group collected by me and by C. A. Hubbard. In Baghdad, there were a few mounted mammals, but no study collection until I established one in the Iraq Natural History Museum. Besides these collections, there appear to be nothing but scattered holdings.

There are apparently no series of Iraq mammal skeletons in existence, except those which Reed and Field obtained for studies in Chicago and those which I have placed in Baghdad and Ann Arbor. A good collection of

skeletons of modern wild and domestic mammals of Iraq is sorely needed to aid in identification of bones recovered in the course of archeological excavations.

### THE MAMMALS

#### The Vanishing Fauna

Iraq is one of the longest-occupied lands and one of the first to develop villages and communities. The records of man's relation to the fauna are extensive and some are very old. About 100,000 years ago men at Barda Balka appear to have eaten rhinoceros and elephant. Deposits in the caves of Hazar Mard in Kurdistan reveal that Paleolithic man of 25,000 years ago ate deer, gazelle, and goat. Studies of other long-occupied caves of Kurdistan which are not yet fully published will extend this record, and the interested reader should particularly watch for further publications by Reed, Solecki, and Fraser.

At Jarmo, a village site of about 6700 B.C., figurines or bones indicate domestication of dogs and goats. In the fourth and third millenia before Christ the Sumerians of lower Iraq left fine representations of both wild and domestic animals. The earliest document listing animals was a Babylonian record of which late Assyrian copies have been studied (Landsberger, 1934; Oppenheim and Hartman, 1945). From this time to the middle of the first millennium B.C. there are many records, both written and pictorial, of what was happening to the large animals of Mesopotamia. The boastful records of the great hunts of the Assyrian kings, which certainly hastened the extermination of some of the big animals, are cited in the present report. Unfortunately, except for Xenophon's account of wild asses on the plains of the Euphrates during the campaign of 401 B.C., there are, so far as I know, no records of animals from about 500 B.C. to the middle of the nineteenth century A.D., when the reports of the Euphrates expedition (Ainsworth; Chesney), the archeologist Layard, and the travels of Lady Anne Blunt ushered in an era of new interest in this area and its animal life.

Although one may be grateful for scattered and fragmentary data from a period of some 25,000 years, they are woefully inadequate to reconstruct the history of any one species in Mesopotamia. Nevertheless, we do know that there were destructive influences from the time man first came into the region. They became accelerated as he developed hunting skills and weapons. As agricultural activities reduced the wild lands of the valleys many wild animals must have been crowded out or destroyed because of their depredations to crops. With the development of the great city-states, and the introduction of the riding horse and the chariot, large animals had an ever poorer opportunity to escape. The Assyrian records suggest that the royal hunts were, like the better documented Asiatic hunts of later centuries, great game drives with enormous slaughter. Assur-nasir-pal II boasted in the ninth century B.C. of taking 450 lions, 390 wild bulls, 30 elephants, 200 ostriches, and more. He had it recorded that he gave a feast at which the menu included over 1,000 cattle, 15,000 sheep, 500 deer,

and 500 gazelles as well as vegetables, fruits, and beer. Even when such bragging is discounted we can be sure that wildlife was rapidly being exterminated. As firearms came into general use in the nineteenth and twentieth centuries, still more game disappeared. In this period, too, the destruction of forests in Kurdistan was accelerated and grazing areas were overrun by sheep and goats.

At present in Iraq all game is hard put to find food or refuge. The deserts are now traversed by fast-moving cars, and in them the hunters, equipped with high-powered rifles, and even, occasionally, with machine guns, give the gazelles and other desert animals little quarter. Public opinion in Iraq is not yet ready to support effective protection and indeed, where the human population pressure is so great, there is little chance to give adequate protection through establishment of preserves. Neither the mountains nor the open deserts can be effectively patrolled.

The first animals to become extinct in Iraq disappeared before the time of maximum development of agriculture and one may suspect that climatic changes or destruction of food resources by herds of sheep and goats were as important factors of extermination as were mass hunting activities. Of other once abundant species only a few stragglers remain in isolated sections. The evidence for the existence of some species reported for the area of modern Iraq is so meager that one cannot be sure the species were ever part of the indigenous fauna.

### Extinct Animals

The animals listed below are arranged in approximate order of their disappearance.

*Rhinoceros*: Known only by a tooth from the Paleolithic site of Barda Balka and by later sculptural representations which are probably of animals from India.

*Bison*: The existence of bison in the region of Iraq is presumptive; there are several accurate depictions of it on cylinder seals and pottery from about 4000 to 2000 B.C. In historic times there are no records for the bison nearer than the Caucasus Mountains.

*Siva's giraffe*: There is meager evidence that *Sivatherium* existed in Iraq in the Paleolithic and as late as 3500 B.C.

*Water buffalo*: Although the evidence is not conclusive that the water buffalo was indigenous to Mesopotamia, the wild type was frequently portrayed until about 2100 B.C. at which time it presumably became extinct.

*Elephant*: There appear to have been elephants in Iraq in the late Pleistocene, as evidenced by two teeth. In 1464 B.C. in western Syria the Egyptian Pharaoh Thutmose III hunted elephants for their ivory. The accounts of several Assyrian kings (circa 1100-800 B.C.) tell of elephant hunts which were presumably along the Euphrates but not certainly in Iraq. After that time there is no record of elephants in the region.

*Wild cattle*: Bones and representations of wild cattle are abundant in archeological sites from the Paleolithic to the ninth century B.C., but

after the seventh century B.C. there is no further record of these animals in the area of Mesopotamia.

*Stag:* A few bone fragments, teeth, and some reasonably accurate depictions of *Cervus* attest the early presence of this deer in Iraq. There are, apparently, no indications that it was here within historic time, although it still exists in Turkey and Iran.

*Beaver:* The only beaver record for Iraq is a mandible recovered from Paleolithic deposits. The beaver reported from the Khabur River in eastern Syria in 1837 may possibly have been otter.

*Oryx:* The oryx, which until recently occurred on the southern desert, has disappeared because of overhunting. The last report of a kill was in 1914.

*Lion:* Lions, which were present along both the upper and lower reaches of the Euphrates in the early nineteenth century, slowly dwindled after the use of firearms became common. The last lions appear to have been killed about the time of the military actions of 1916-18.

*Fallow deer:* The fallow deer was decimated in the early part of the present century. The last specimen to be taken (in fact the only one specifically for Iraq) was killed at Zakho in 1917. A few may still exist near the Persian border.

*Onager:* The wild ass was once abundant in the plains, but since the middle of the nineteenth century it has apparently fallen prey to too much shooting. The last herd reported was seen near Jabal Sinjar in 1927.

#### Species Threatened with Local or Total Extinction

*Bear:* Now rare in the hill country.

*Leopard:* Few and scattered.

*Cheetah:* Only a few specimens are seen on the southern desert.

*Wild sheep:* Rare in the Kurdish hills.

*Wild goat:* The tribesmen regularly hunt goats and they are becoming rare.

*Roe deer:* Uncommon in Kurdistan.

*Gazelle:* Killed everywhere without concern for the future.

*Lynx caracal* *honey badger*, and *badger*: Known by only a very few specimens or reports and probably in danger of extinction.

*Marten* and *squirrel*: Endangered by shrinking habitat.

#### Relative Abundance

The following trap records are offered as an indication of abundance of small mammals. Comparative figures for different seasons and the same site should be sought by future collectors.

In late October, 1952, traps set in a variety of lakeside, wadi, and desert situations at Lake Habbaniya yielded a return of .064 small mammals per trap-night (a 6.4 per cent yield). In less arid situations around Sulaimaniya trapping during early November gave a 2 per cent return of small mammals per trap-night — lines in dry hillsides and farm lands

yielded nothing. Trap lines in mid-November at Sarsank yielded a 7.8 per cent return. The eye alone cannot accurately appraise the likelihood of mammals being found: In a dry rocky wadi near Haditha where there was no visible food, five traps in sequence each held one *Gerbillus dasyurus* (Dec. 4 and 5), and a total of 75 traps in the wadi yielded a 13 per cent return. Ninety traps in tall dry grass under neglected date trees near Babylon yielded 18 *Mus musculus* the first night — a 20 per cent return. Several winter trap lines were completely empty; others yielded as little as 1 per cent. Poor yield was not always due to absence of mammals. With foxes, jackals, wolves, and hyenas scavenging through the night, traps were often missing or empty by morning, and on other occasions traps were lost to desert nomads or farmers.

### Iraq Animal Names

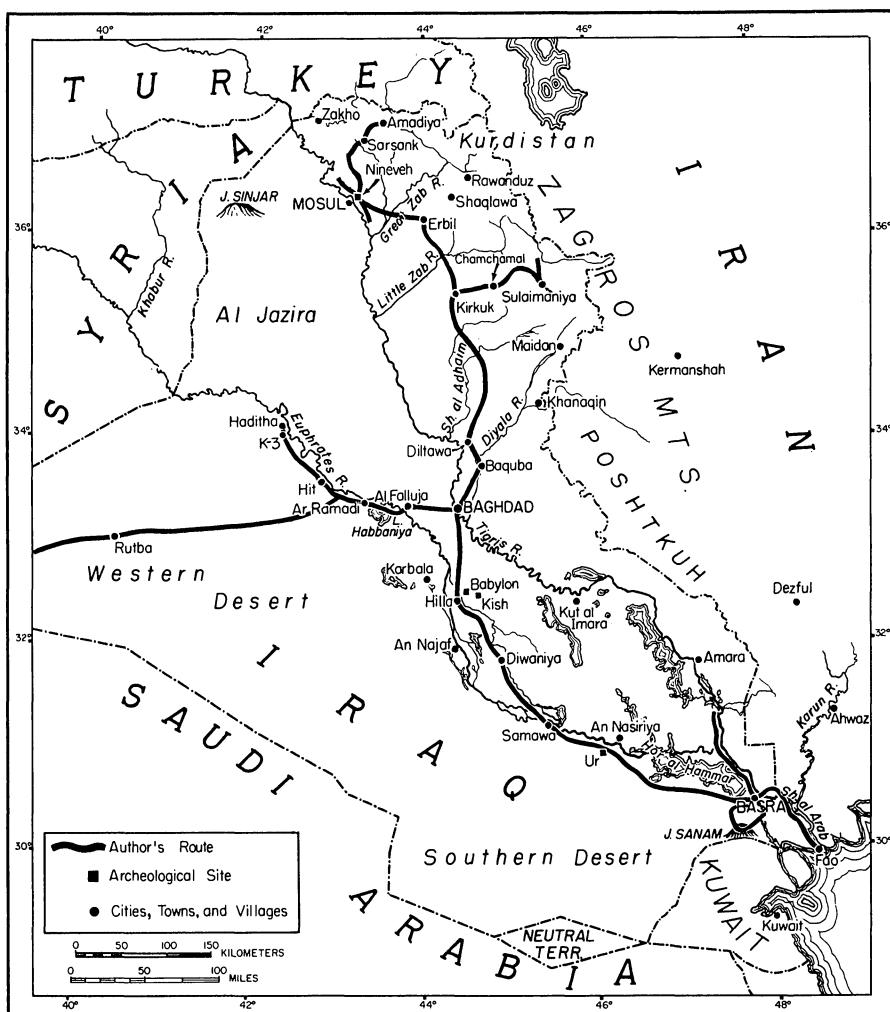
In Iraq a well-known animal, such as a jackal, may have a name in classic written Arabic, another in the language of the press, and several in spoken Arabic. It will usually have other names among the Kurds, the northern Christians (the modern "Assyrians" whose language is Neo-Syriac), the Turks, or the Persians. The Yezidis will normally use the same name as do the nearest Kurds. Fortunately for the Western collector many Iraqi now speak English and may know the names in this language.

I gathered local names in Arabic, Kurdish, Persian, and Turkish among both Arabs and Kurds, but always from informants who could speak English. Charles A. Reed compiled a good list in Erbil Liwa, and I have also used his findings. Zoological literature contains several good compilations, among which are Metaxas' notes (1891) and the Cheesman report (1920), both of which give Arabic names from Mesopotamia; Field's list (1955b) with Arabic, Kermanji (a Kurdish dialect), and Neo-Syriac names from Jabal Baradust; and Danford and Alston's Turki names (1877, 1880).

### Accounts of Species and Subspecies

The sequence of orders and families used in this section is that of Ellerman and Morrison-Scott (1951). Except for the inclusion of synonyms with Iraq Type localities, I give complete citation in this report only for those subgeneric taxonomic units which are recognized herein. Other citations are references to the bibliography. Citations of Cheesman's "Report on the Mammals of Mesopotamia" are to its original publication (1920), although some readers may find it more convenient to refer to its republication (1923) by the Bombay Natural History Society in the volume *Survey of the Fauna of Iraq*, in which the pagination was changed from 323-46 to 1-24. The same is true of Pitman's "Notes on Mesopotamian Mammals" (1922), which changed pagination in 1923 republication from 474-80 to 317-23.

Under *Specimens* I record not only my own take and that of my associates, but also hitherto unpublished specimens in the Iraq Natural



History Museum. Where not otherwise indicated, the specimens are those resulting from our own field work.

Measurements are given only for rarities.

Such data as I have incorporated on habits and habitat of the mammals are either from my own notes, from notes provided by Charles A. Reed, or from difficult-to-secure references. More information about many of the species will be found in the writings of Cheesman (1920), Pitman (1922), and Harrison (1956a-c).

The reader may discover inconsistencies in orthography in animal and place names from Arabic, Persian, Kurdish, and Turkish. Each group was reviewed by persons familiar with the languages in question, but complete consistency could not be attained.

The following abbreviations are used: BMNH, British Museum (Natural History); CNHM, Chicago Natural History Museum; INHM, Iraq Natural History Museum; UMMZ, Museum of Zoology, University of Michigan. Arab., Arabic; Kurd., Kurdish; Pers., Persian; Turk., Turkish.

## INSECTIVORA

### Erinaceidae

Hedgehogs; kinfuth (classic and spoken Arab.), kumfith, kumfid (spoken Arab. in northern Iraq), gunfuth (spoken Arab. in central and southern Iraq), dhalij (Bedouin Arab.); zhishik, jujik (Kurd.); kaduda (Neo-Syriac); zhujet-teerhee (Pers.); kirpi (Turk.). The Bedouin Arabic, Persian, and Turkish words are also used for porcupine.

#### *Erinaceus europaeus* Linnaeus

European hedgehog

*Erinaceus europaeus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 52. *Type locality*: Wamlingbo, South Gothland Island, Sweden (Thomas, *Proc. Zool. Soc. London* 1911, 1911, p. 142).

Harrison (1956a: 261) reported a specimen from Hais, taken in August, 1954, and Charles A. Reed secured one (CNHM 84448) at Banaman, elevation 2,300 ft., on December 14, 1954.

#### *Hemiechinus auritus calligoni* Satunin

Long-eared hedgehog

*Erinaceus calligoni* Satunin, *Prot. Obshch. Est. Kazan*, No. 192 (misprinted 191) (1901): 2. *Proc. Zool. Soc. London* 1901, 2 (1901): 284. *Type locality*: Village of Aralyk, about 40 versts (circa 43 km.) S Erivan, Armenia.

*Specimens*: 2. Mansuriya al Shatt, dried skins emptied of their contents by a predator. A mounted specimen in the Iraq Natural History Museum is without data.

This hedgehog was listed from Mesopotamia by Ainsworth (1838: 37) and Schmarda (1853: 408). It was recorded from Amara and Basra by Cheesman (1920: 329) who referred to it as the common hedgehog of the lower Tigris. Pitman (1922: 474) recorded the species as common at Hit and Al Falluja on the banks of the Euphrates and as occurring near Samarra. Specimens were reported from Baghdad by Sanborn (1940: 158), Weber (1955: 123), and Hubbard (1955: 190). I heard reports of hedgehogs at Sulaimaniya and presume these animals to have been *Hemiechinus*.

#### *Paraechinus aethiopicus ludlowi* Thomas

*Paraechinus ludlowi* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 26 (1919): 748. *Type locality*: Hit, Iraq.

*Specimen: 1. Haditha.*

This specimen was found dead under a rocky ledge at the crest of a small desert hill. A second specimen, brought in alive from the environs of Baghdad, escaped from its cage.

## Soricidae

*Suncus murinus* Linnaeus

House shrew, "musk-rat"; jeraidy el misk, zabab (Arab.); mishka-kora ("Blind mouse"), mishka-kwaira (Kurd.).

*Sorex murinus* Linnaeus, *Syst. Nat.*, ed. 12, 1 (1766): 74. *Type locality:* Java.

*Specimen: 1. Basra, female, February 4.*

*Measurements:* Head-body 108 mm., tail 65, foot 20, ear 15, weight 38 gm.

The specimen was trapped in a date orchard. There were three pairs of inguinal mammae.

Cheesman (1920: 328) recorded from Basra, Al Qurna, and a "locality unknown," eight specimens which he believed represented two forms, one possibly indigenous. One of these would be *Suncus murinus*.

*Suncus etruscus etruscus* Savi

## Savi's pygmy shrew

*Sorex etruscus* Savi, *Nuovo Giorn. de Letterati, Pisa*, 1 (1822): 60. *Type locality:* Pisa, Italy.

These shrews were obtained at Kut al Imara, Basra, and Amara by collectors in the British Expeditionary Force (Cheesman, 1920: 329). Pitman (1922: 474) reported a living one at Al Falluja.

*Crocidura suaveolens* Pallas

## Lesser white-toothed shrew

*Sorex suaveolens* Pallas, *Zoogr. Ross. As.*, 1 (1811): 133, Pl. 9, Fig. 2. *Type locality:* Khersones, Crimea, U.S.S.R.

Harrison (1956a: 261) reported a specimen from Bebaidi, taken in August, 1954.

*Crocidura leucodon persica* Thomas

## Persian white-toothed shrew

*Crocidura leucodon persica* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 7, 20 (1907): 198. *Type locality:* Elburz Mountains, near Demavend, Iran. Alt. 6,500 ft.

*Specimens:* 7. Sarsank, 3 males, 4 females, November 18 to 20.

*Measurements:* Largest male and 2 others, head-body 65 mm. (59, 54), tail 45 (36, 48), foot 14 (14, ?), ear 10 (7, 9). Largest female and 2 others, 73 (68, 53) x 38 (47, 55) x 15 (14, 15) x 10 (?), 10).

All specimens were taken in dense shrubby cover adjacent to a small hillside watercourse shaded by a growth of poplars, or at the margin of a garden which, at other seasons, is irrigated.

This record appears to be the first for the capture of the genus in Iraq, although Ainsworth's report (1838: 37) of *Sorex pusillus* for the region of Mesopotamia may be based on a specimen of *Crocidura* from Iraq, and Harrison (1956a: 261) recorded his capture of a specimen of *C. suaveolens* in 1954. I have identified specimens of *C. l. persica* secured by Charles A. Reed in late October near Salahuddin at Cora (alt. 2,550 ft.) and Almawan (2,500 ft.).

## CHIROPTERA

Bats; khushaf el ley ("the one who flies by night"), sahat (Arab.); wat wat, khuffash (classic Arab.), khaffash (common Arab.); shamshama-kwaira (Kurd. in Sulaimaniya), shamshama-kora (Kurd. in Erbil), checkcheckuleh (Kurd.), teri shevek (Kermanji Kurd.); parkha leli (Neo-Syriac); shabpareh (Pers.); yarasa (Turk.).

Bats occur in great abundance in Baghdad during late October and again in early March. At least four species were seen hunting along the river banks. In the caves of Hazar Mard near Sulaimaniya a few bats were heard, but none were seen. The guano of the bats and birds that inhabit the mouths of these shallow caves was being used by Shaikh Baba Ali to fertilize his gardens on the hills below the caves.

Metaxas (1891: 325) noted that bats were reportedly once hunted and eaten by Babylonians. Inquiry should be made about such practice today.

### Rhinopomatidae

#### *Rhinopoma hardwickei arabium* Thomas

Lesser rat-tailed bat

*Rhinopoma cystops arabium* Thomas, Ann. Mag. Nat. Hist., Ser. 7, 12 (1913): 89. *Type locality:* Wasil, Yemen. Alt. 4,000 ft.

From a sinkhole cave near Haditha, Field (1951: 16; Sanborn, 1956: 77) in March obtained 6 males and 21 females identified as *Rhinopoma cystops cystops*. Kinnear (1916: 3) indicated an Iraq record for *Rhinopoma arabicum* (= *arabium*), which, like *cystops*, is now regarded as a subspecies of *hardwickei* by Ellerman and Morrison-Scott (1951: 102).

## Emballonuridae

*Taphozous kachhensis magnus* Wettstein

Babylonian sheath-tailed bat, tomb bat

*Taphozous magnus* Wettstein, *Ann. Naturh. (Mus.) Hofmus. Wien*, 27 (1913): 466. *Type locality*: Basra, Iraq.

*Taphozous kachhensis babylonicus*, Thomas, *Journ. Bombay Nat. Hist. Soc.*, 24 (1915): 58. *Type locality*: Euphrates River, Iraq.

This bat has been reported from "the Euphrates River" (see above); listed by Kinnear (1916: 3); taken at Amara, Shuaiba, Ctesiphon, and Basra (Cheesman, 1920: 326); Baghdad and Diltawa (Sanborn, 1940: 157); and the Ctesiphon arch (Weber, 1955: 125). Harrison (1956b: 1) reported it between Habbaniya and Ar Ramadi, at Habbaniya, and at Shuaiba.

## Rhinolophidae

*Rhinolophus ferrumequinum* Schreber

Greater horseshoe bat

*Vespetilio ferrum-equinum* Schreber, *Säugeth.*, 1 (1774): Pl. 62, upper figs. (p. 174 in text). *Type locality*: France.

Although the species is known from surrounding countries, it has been reported from Iraq only by Mextaxas (1891: 325) and in Kinnear's undocumented listings (1916: 2). Ainsworth (1838: 37) reported that more than one species of *Rhinolophus* was present in the region.

*Rhinolophus hipposideros midas* Andersen

Midas horseshoe bat

*Rhinolophus midas* Andersen, *Proc. Zool. Soc. London* 1905, 2, Pt. 1 (1905): 138. *Type locality*: Jask, on Gulf of Oman, southeastern Iran.

Three specimens from Baghdad were reported by Cheesman (1920: 326).

*Rhinolophus euryale judaicus* Andersen and Matschie

Mediterranean horseshoe bat

*Euryale judaicus* Andersen and Matschie, *S. B. Ges. Nat. Fr. Berlin*, 1904, p. 80. *Type locality*: Cave of Adallam, Jerusalem, Palestine.

Kinnear (1916: 2) reported *judaicus* from Iraq, but his identification finds no mention or support in Cheesman's report (1920).

*Asellia tridens murraiana* J. Anderson

Trident leaf-nosed bat

*Phyllorhina tridens* var. *murraiana* J. Anderson, *Cat. Mamm. Ind. Mus.*, 1881, p. 113.  
 Type locality: Karachi, Pakistan.

Iraq localities from which specimens of this common bat have been obtained are Al Falluja and "Lake" Aqar Quf (Cheesman, 1920: 326), Baghdad (Sanborn, 1940: 157; Hubbard, 1955: 190), Mosul (Wettstein, 1913: 465), Al Qaim on the Euphrates near the Syrian border (Weber, 1955: 125), and Ar Ramadi, Habbaniya, and Uqhaidhir (Harrison, 1956b: 1). Kinneear (1916: 2) also reported it from Iraq without specific locality. C. A. Hubbard, by letter, reported that in the spring of 1953 there were large numbers of pregnant trident bats in the cells of the Mustansiriyah, a partially restored ancient building on the banks of the Tigris in Baghdad.

## Molossidae

*Tadarida teniotis* Rafinesque

European free-tailed bat

*Cephalotes teniotis* Rafinesque, *Préc. des Découv. Somiol.*, 1814, p. 12. Type locality: Sicily.

A specimen secured on November 3 between Ar Ramadi and Habbaniya was reported by Harrison (1956b: 1).

## Vespertilionidae

*Myotis myotis omari* Thomas

Large mouse-eared bat

*Myotis myotis omari* Thomas, *Proc. Zool. Soc. London* 1905, 2, Pt. 2 (1906): 521. Type locality: Derbent, 80 km. W Isfahan, Iran. Alt. 6,500 ft.

Two specimens from Diyana, near Baradust, were listed by Sanborn (1940: 157), and bones from the Hazar Mard caves were reported by Bate (1930a: 39).

*Myotis (Leuconoe) capaccinii burenschi* Heinrich

Long-fingered bat

*Leuconoe capaccinii burenschi* Heinrich, *Mitt. Naturw. Inst. Sofia*, 9 (1936): 38. Type locality: Karamler, Strandja-Balkar, Bulgaria. Alt. 800 ft.

A male, secured by Henry Field on March 23 near the ruined city of Kish, was reported by Sanborn (1956: 77).

*Vespertilio murinus* Linnaeus

Particolored bat

*Vespertilio murinus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 32. *Type locality:* Sweden.

Metaxas (1891: 325) reported this species in Mesopotamia, but so far as I know there is no voucher specimen from Iraq.

*Eptesicus nasutus pellucens* Thomas

Sind bat

*Vespertilio matschiei pellucens* Thomas, *Proc. Zool. Soc. London* 1905, 2, Pt. 2 (1906): 520. *Type locality:* Ahwaz, Karun River, southwestern Iran. Alt. 200 ft.

Harrison (1956b: 2) reported a specimen secured at Shuaiba in March by M. Skerrow, and two other specimens in the British Museum collected earlier at Az Zubair.

*Eptesicus walli* Thomas

Wall's serotine bat

*Eptesicus walli* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 26 (1919): 746. *Type locality:* Basra, Iraq.

Sanborn (1940: 159) listed nine specimens from An Nasiriya and Cheesman (1920: 328) re-recorded the Type.

*Eptesicus nilssoni nilssoni* Keyserling and Blasius

Northern bat

*Vespertilio nilssoni* Keyserling and Blasius, *Arch. Naturgesch.*, 5 (1) (1839): 3-5. *Type locality:* Sweden.*Specimen:* 1. Baghdad, male, October 30.*Measurements:* Head-body 60 mm., tail 47, foot 9, ear 16.This record is new for Iraq. My specimen was compared with specimens in the Chicago Natural History Museum of *Eptesicus nilssoni gobiensis* from Golubalchi Nor. The Baghdad specimen seemed identical with them in color. The length of the forearm in six Gobi specimens ranged from 39 to 43 mm.; that from Baghdad was 42.5. An undocumented specimen, collected by Neal A. Weber, is in the Iraq Natural History Museum.*Eptesicus sodalis hingstoni* Thomas

Hingston's serotine bat

*Eptesicus hingstoni* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 26 (1919): 745. *Type locality:* Baghdad, Iraq. The Type and 2 others from Basra noted.

This bat was reported from Baghdad by Cheesman (1920: 327) and from Baghdad, An Nasiriya, and Karbala by Sanborn (1940: 158). Harrison (1956b: 2) secured specimens at Habbaniya and Basra.

*Eptesicus serotinus turcomanus* Eversmann

Turkestan serotine

*Vespertilio turcomanus* Eversmann, *Bull. Soc. Nat. Moscou*, 1 (1840): 21. *Type locality:* Between Caspian and Aral seas, Russian Turkestan.

Harrison (1956a: 262) reported specimens from Ser Amadiya and Kani Mase, Kurdistan.

*Pipistrellus kuhli kuhli* Kuhl

White-bordered pipistrel, Kuhl's pipistrel

*Vespertilio kuhlii* Kuhl, *Ann. Wetterau. Ges. Naturk.*, 4 (2) (1819): 199. *Type locality:* Trieste (Italian-Yugoslavian border).

*Specimens:* 5. Baghdad, 2 males, 3 females, October 29, December 20, January 8.

Other Iraq records are from Karbala, Baghdad, Mosul, Qalat Sharqat, Mejadin, and Bahrka (Wettstein, 1913: 466); Amara, Baghdad, and Shaikh Saad (Cheesman, 1920: 327); Baghdad, Amara marshes, Shaikh Falih as Saihud's camp, Al Halfayah, Balad Sinjar, Badra, Diltawa, An Nasiriya, Karbala, and Rustam Farm near Baghdad (Sanborn, 1940: 158); Baghdad, Al Qaim, and pipeline station T-1 (Weber, 1955: 124); Dhibban (near Habbaniya), Shuaiba, Ar Ramadi marshes, a point south of Amiriya, Ar Ramadi-Habbaniya, Basra, Al Falluja, and Uqaidhir (Harrison, 1956b: 2).

The specimen secured on October 29 had been seen on four successive days resting on the upper wall of a dark passage just after twilight, by which time its feeding hour was done. At daybreak the bat was at the same spot, but would shortly disappear into a crevice between wall and roof. No other bat roosted near this individual. Three were taken in downtown Baghdad on January 8. When shaken from an awning, they fell, torpid, into a wet gutter from which they made no effort to escape. These three bore no external parasites.

*Pipistrellus rüppelli coxi* Thomas

Cox's pipistrel

*Pipistrellus coxi* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 26 (1919): 747. *Type locality:* Beit Muhammad, near Amara, Iraq.

The Type and a specimen from Basra were listed by Cheesman (1920: 327).

*Otonycteris hemprichi* Peters

Hemprich's long-eared bat

*Otonycteris hemprichii* Peters, *Monatsb. Preuss. Akad. Wiss.*, 1859, p. 223. *Type locality*: Not given, but according to Ellerman and Morrison-Scott (1951: 180) the Type is probably from some part of northeastern Africa.  
*O[tonycteris] petersi* Anderson and de Winton, *Zool. Egypt; Mamm.*, 1902, p. 120, Pl. 18, Fig. 3. *Type locality*: Fao, Iraq.

Kinnear's notation (1916: 3) of an Iraq record of *petersi* probably referred to the Type. Ellerman and Morrison-Scott (1951: 180) listed *Otonycteris petersi* from Fao as probably a synonym of *hemprichi* citing Ognev, a reference I have not seen.

*Plecotus auritus* Linnaeus

Long-eared bat

*Vespertilio auritus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 32. *Type locality*: Sweden.

Metaxas' report of this species in Mesopotamia (1891: 325) is unsubstantiated.

*Miniopterus schreibersi pulcher* Harrison

North Arabian long-fingered bat, Kurdish long-winged bat

*Miniopterus schreibersi pulcher* Harrison, *Journ. Mammal.*, 37 (2) (1956): 261. *Type locality*: Ser Amadiya, Iraq.

This newly described subspecies is a pale gray form, differing from South European *Miniopterus schreibersi schreibersi* in its extreme pallor and from *M. s. pallidus* of northern Iran in being gray and even paler. *M. s. pallidus* is described as pure wood brown on the back.

Harrison also obtained a specimen at Jerash, Jordan.

## PRIMATES

The only nonhuman primates to be considered for Iraq are unidentified monkeys, representations of which appear in metal, stone, and pottery. They were certainly not indigenous, but came in by trade as did gold, bronze, silver, copper, lapis, hardwood, and indeed, except for clay, almost everything with which Sumerian artists worked. One of the best representations of a monkey is a minute gold figure from Ur (Woolley, 1934: 300 and Pl. 165). Woolley also noted that from the Sargonid period onward monkey amulets are fairly common, and that from the Larsa period (circa 2000 B.C.) there are terra-cotta reliefs of a man carrying a monkey and of a man leading one by a string which anticipate late Assyrian stone reliefs in which monkeys appear. A cylinder seal on the First

Dynasty of Babylon (circa 2000 B.C.) shows a man holding a monkey on a leash (Frankfort, 1955: 46 and Seal 956).

Identification of the monkeys that are depicted in Assyrian sculpture was attempted by Houghton (1877: 319-21). He described one monument as showing a langur, *Presbytis entellus*. Three monkeys are depicted on the Black Obelisk (circa 825 B.C.) among other foreign tribute animals. One of these monkeys, shown with its shoulders covered with long curly hair, Houghton identified as the lion-tailed macaque (*Macacus silenus*) of India. Other maned primates which the Assyrians may have known are the gelada of Abyssinia and the hamadryad of Arabia and Abyssinia. The taillessness of one of the monkeys on the obelisk may be merely the result of a leg masking the tail. VanBuren (1939: 22) suggested that the small heads and lack of tail on Sumerian monkey figurines from Ur indicated that a gibbon may have been the model.

#### CARNIVORA

##### Canidae

###### *Canis lupus pallipes* Sykes

Wolf; theeb (Arab.); gurg, gurick (Kurd.); dheeva (Neo-Syriac); gurg (Pers.); kurt, djanavar (Turk.).

*Canis pallipes* Sykes, *Proc. Zool. Soc. London 1830-31*, 1831, p. 101. *Type locality:* Deccan, India.

In the Iraq Natural History Museum is a skull, extracted from a mounted specimen for which no data have been recorded.

Wolves appear to be widespread in Iraq. Records include specimens from Shuaiba and At Tanumah near Basra (Cheesman, 1920: 333); Kuwait and Ur ("Muskyay-yar") (Pocock, 1935b: 671); Seri Hassan Bey Mountain near Rawanduz and the Diyala, Sulaimaniya, and Khanaqin (Sanborn, 1940: 159); Sinjar (Field, 1954). There is a report of a wolf den near Haditha (Field, 1951: 16), and Field (1954) wrote of wolves reported on Kara Dagh between Kirkuk and Sulaimaniya, and near the Umm al Kaheb wells. Layard (1859: 193) narrated an encounter with a wolf at Negoub.

The difficulty of distinguishing between the skulls of Iraq wolves and the skulls of Iraq dogs was pointed out by Lawrence (1956) in her report on animal bones collected by Field from a cave near Haditha. Her study indicates that probably both *Canis lupus arabs* and *C. l. pallipes* are represented in Iraq and that wolf - dog crossing may occur in this area. While the wolf is still a fairly common animal in Iraq, a good series of specimens should be obtained throughout the range so that the character of wolf and wolf - dog hybrid populations may be better understood.

In southern Iraq wolves were reported chiefly at the desert fringe, lurking in the reed beds in the winter and following the flocks of sheep and goats into the desert with the advance of spring. The Royal Hunt of Baghdad followed a wolf a few years ago, according to a farmer who saw it. Wolves are said to come into the compound of pipeline station K-3 occasionally. Louis Marriott of that station says that they are common along

the Tripoli pipeline near and beyond the Syrian border. Residents of Sulaimaniya and Sarsank reported them as fairly common in the hills. We saw only one, and this in the hills near Lake Habbaniya. Large tracks and a den which we saw in the ruins of Borsippa were believed to be those of wolves.

Marriott reported that in Syria he once saw an unarmed Arab, riding a donkey, attacked by seven wolves. Driving up in his truck, Marriott shot four of the wolves, but not before they had killed the donkey.

Charles A. Reed has prepared the following notes for publication here:

Wolves seem to be much more numerous than bears or leopards, in spite of the fact that they are very destructive to sheep and goats, and thus are killed whenever possible. They are said to be one of the three commonest mammals of the Bola area (the other two are pig and bear). In the mountains in the winter wolves are said to run in packs of a dozen or less, and then are dangerous to lone humans. In the winter a single wolf is said to lure one or more village dogs out into ambush, where the pack then has dinner.

I got three wolves, one from northern Erbil Liwa, two from near our camp, Jarmo, in eastern Kirkuk Liwa. A wolf den had been dug into near camp, and four month-old pups were captured. When I secured them they were being taken into Kirkuk to be offered for sale as pets.

Shepherd boys have a very peculiar call when a wolf is sighted, and one soon gets to recognize this. I suspect that sometimes it is a false alarm, but every shepherd boy within hearing immediately rounds up his flock.

Both at Sinjar and at the frontier police post of Sihaniyah in northwest Mosul Liwa I was told that wolves occurred occasionally on the Jabal Sinjar and southward into Al Jazira.

*Canis familiaris* Linnaeus

Dog; kelb (Arab.); suck (Kurd.); kopek, it (Turk.)

*Canis familiaris* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 40. *Type locality*: Uppsala, Sweden.

The dogs of early Mesopotamia are known from only a few remains and these are as yet inadequately studied. The plasticity of the species and the lack of adequate series of modern dogs from the Middle East make the task difficult. Lawrence (1956) pointed out the difficulty of differentiating between dog and wolf skulls from Iraq. A skull recovered from a pre-Sumerian level of a well at Tepe Gawra has been called a seluki (Tobler, 1950: 32 and Pl. 37b). In the Iraq (Archeological) Museum are displayed the skeleton of a dog and that of a boy as they were found in a common grave at Eridu, and the specimen deserves careful study. Skull fragments with teeth, recovered at Tel Asmar, were illustrated by Hilzheimer (1941: 26-27), who suggested that the fragments best fit the *Canis familiaris palustris* group of dogs. He noted that a large spitz represented on an old Sumerian seal may represent the same stock.

In pictorial and sculptural representations two types are easily recognized: (1) a large mastiff-like breed, used as a war dog and for pulling down lions, wild cattle, asses, bears, and boars; and (2) a greyhound type, large-eyed, swift, adapted to hunting on the plains, but poorly fitted for following trails in the hills and brushlands. An animal shown on a gold

headband from Ur was interpreted by Woolley (1934: 299 and Pl. 139) as a dog of mastiff type. Mastiffs are unmistakably shown in Babylonian and Assyrian art. In one picturization from Babylon of 2200 B.C. is a gigantic mastiff which, to judge from the man beside it, stood about 80 cm. at the shoulders. Other representations show similar dogs of 60 to 70 cm. shoulder height (Hilzheimer, 1932: 415). The war dogs of Assur-bani-pal of Nineveh (650 B.C.) were almost as large as the lions with which the Assyrians depicted them.

The modern Kurdish herding dogs are mastiff-like: their heads are massive and their hair is of medium length and colored from near-white to dark gray, mottled or single-colored (see Pl. I). They are usually hostile to strangers.

The greyhounds are shown on a stamp seal from the Level XII of Tepe Gawra (Bache, 1936: 97), indicating their development as a breed more than 5,000 years ago. A bronze dish in the British Museum, found at Nimrud, also shows these hunting dogs (Houghton, 1876: 56). They are represented today by the delicate, lean selukis, assorted as to color, usually with long soft hair fringing the ears, flanks, and tail, but sometimes short-haired all over. We saw selukis near Mosul, Sulaimaniya, and Baghdad. Their masters used them for running hares. Because these hunting dogs had to be confined most of the time, they were always collared and were the only Iraqi dogs I saw so treated except for a few Western dogs in Baghdad.

Nondescript dogs of mixed blood and great ferocity are encountered guarding Bedouin camps and small Arab villages, but no dogs were seen at the camps of fishing Arabs at Lake Habbaniya, nor at villages of the Swamp Arabs in the southern Iraq. In the cities dogs of European breeds are occasionally kept as pets. The Royal Hunt of Baghdad maintained a pack of good foxhounds. The traditional Moslem dislike of dogs as unclean creatures does not prevent their being usefully employed, and owners of selukis, at least, occasionally show some affection toward them.

#### *Canis aureus aureus* Linnaeus

Asiatic jackal; ibn awa (classic Arab.), wa wie (spoken Arab.); chagal, turg (Kurd.); shoghal (Pers.); chakal (Turk.).

*Canis aureus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 40. *Type locality:* Province of Lar, Persia.

*Specimens:* 10. Basra, female; the Diyala, 2 males; Hilla, female and 6 skulls (sex unknown). Of 3 mounted specimens in the Iraq Natural History Museum, 2 are from Baghdad, 1 from Hilla.

The occurrence of jackals in Iraq has been noted by most of those who have written about its mammals. Metaxas (1891: 322) reported rabid jackals. Kinnear (1916: 6) mentioned the species. Cheesman (1920: 333) listed 13 specimens taken in Mesopotamia, including specimens from Kut al Imara, Shuaiba, Baghdad, Qalat Luqait, Amara, and Shahraban. He reported that the troops killed over 60 jackals in a few weeks in gardens at

Shaikh Saad, where the animals were very destructive to vegetables and fruits. Pitman (1922: 475) gave notes on jackals along the lower Tigris and Euphrates. Sanborn (1940: 159) reported a specimen from the Diyala, and Hubbard (1955: 191) a specimen from Baghdad.

Jackals are abundant in the cultivated lands and near the villages from the Persian Gulf to the mountains, but appear not to dwell in the higher mountains. Shaikh Baba Ali reported trapping six in his orchards at an altitude of approximately 3,000 ft. near Sulaimaniya, but they are said not to occur near Sarsank (3,000 to 6,000 ft.).

Jackals may be seen active at any hour of the day, but from midmorning until late afternoon they remain relatively quiet. Of 21 living ones that I saw from November 25 to January 28, 10 were seen in pairs. Two of the five pairs were lying out in the early morning sun, one pair was feeding in early morning, and the other two pairs were moving.

Jackals, rather than foxes, were followed by the Royal Hunt, a group of Iraqi and British established in 1946, who hunted with hounds every Friday during the cool months. Captain Hirst, Master of the Hunt in 1952-53, reported that more females than males are taken, because of the mother's reluctance to abandon her cubs. The hunters recognized three types of jackals: the city scavenger which is slow and smelly, and which the dogs do not like to follow; the "village jack," faster, more alert, and less odorous; and the open-country jack which is still faster, cleaner, and better sport.

Jackals are also considered fair game for anyone with a gun, but their boldness would indicate that they are in fact rarely shot at. We saw remains of about a dozen on the ziggurat of Borsippa, and three dead on roads.

Jackals, like foxes, are commonly seen in the ruined cities, where dry dens are easily found or constructed. They also haunt the banks of irrigation channels which provide shelter, soft earth, and a concentration of food animals.

Stomachs examined by members of the Royal Hunt have usually contained insects and dates but no animal bones. Near Sulaimaniya jackals are reported to shake small fruit trees to bring down the fruit.

The color range of the jackals is considerable even within one area. The animals near Baghdad are identified as *Canis aureus aureus* or *C. a. syriacus* depending on whether they are light or dark. The Royal Hunt saw a pair of almost black jackals on January 30, and an extremely light, though not white, one in the same season. Those which I obtained (and the more than 20 which I saw, from Basra Liwa to Kirkuk) were of a lightness that leads me to refer them all to *C. a. aureus*. Pocock (1938: 38) and Cheesman (1920: 333) discussed this classification.

### *Vulpes*

(See Morrison-Scott, *Novit. Zool.*, 41 (1939): 199)

True foxes; thaaleb (classic Arab.), husseini, abul hussein (spoken Arab.), biz biz (colloquial Arab.); raywee, reyvi (Kurd.); tala (Neo-Syriac); roobah (Pers.); tilki (Turk.).

*Vulpes vulpes flavescens* Gray

Tawny fox

*Vulpes flavescens* Gray, *Ann. Mag. Nat. Hist.*, Ser. 1, 11 (1843): 118. *Type locality:* Northern Persia.

*Specimens:* 4. Kirkuk market, native skins.

These skins, although they exhibited a wide range of color, were richer in color and had longer hair and bushier tails than the foxes of the arid lowlands. A native skin from Rawanduz (which I have not seen; it was reported by Sanborn (1940: 159) as *splendidens*) is presumably the same race as the skins that I bought in the Kirkuk market.

Ainsworth (1838: 38) reported foxes common — “corsac” on the Eu-phrates, *vulpes* in the Taurus of Asia Minor.

Charles A. Reed, whose specimens from Jarmo should probably be referred to *flavescens*, has provided the following interesting notes:

Foxes seem to be exceedingly common throughout the whole area I visited [north-eastern Iraq]. They are often seen on the road at night, and are regarded as a common pest around villages, both in the foothills and the mountains. In northern Erbil Liwa I know personally that they are found almost to timberline. On the Erbil plain, the fox is one of the animals hunted with seluki dogs (although I was not fortunate enough to be in on such a hunt).

At our camp, Jarmo, near Chamchamal, I offered 750 fils per fox, and almost immediately got five, and so had to withdraw the offer.

In the Kurdish villages out of Chamchamal, we were told that fox was eaten in the winter. I think this very strange in a land where the dog is regarded as utterly unclean.

*Vulpes vulpes pusilla* Blyth

(Pl. II)

Tawny fox, desert fox, red fox

*Vulpes pusillus* Blyth, *Journ. Asiatic Soc. Bengal*, 23 (1854): 729. *Type locality:* Salt Range, Punjab, India.

*Specimens:* 5. Hilla, male; Baghdad, male; Baghdad market, 3 skins, no data. (In the Iraq Natural History Museum is one mounted skin, obtained at Baquba in 1949 by Ibrahim al Khahairi. Another mount, collected in 1930, and one additional native skin lack data.)

About twelve skins were seen in the Baghdad market, and these varied greatly in length of hair and in shade, but they were, in each instance, smaller and smaller-tailed than the skins of *Vulpes vulpes flavescens* from Kirkuk. I presume all were from the vicinity of Baghdad as the vendor claimed.

Foxes were obtained by collectors in the British Expeditionary Forces (Cheesman, 1920: 334) at Qalat Luqait, Shatt al Adhaim, and the Basra market. Cheesman, like Sanborn (1940: 159), referred specimens from the Mesopotamian plains to the subspecies *pusilla*. For a discussion of the classification the reader is referred to Pocock (1936: 45).

The desert fox is a common denizen of the ruined cities of Mesopotamia where they are often closely associated with hares, wolves, and hyenas. Foxes were seen repeatedly in the mound at Babylon known as the Summer Palace and at Borsippa. At Ctesiphon, in January, two freshly dug fox dens were found leading from an archeologist's trench near a hyena den. At Babylon jackals and hares were seen near foxes in the ruins; at Borsippa jackals were seen near foxes.

At Babylon, one day in January, I watched two magpies trying to annoy the foxes. Three or four adult foxes were hunting over the ruins, and a pair of cubs were playing and squealing in full view. The magpies would alight time and time again about 15 feet in front of a fox, apparently trying to distract him. It must have been an old game for the foxes ignored the birds completely.

The farthest south that we saw a fox was the crest of Jabal Sanam (503 ft.), on the Kuwait border, where we saw one hunting.

*Vulpes rüppelli sabaea* Pocock

(Pl. III)

Sand fox

*Vulpes rüppelli sabaea* Pocock, *Ann. Mag. Nat. Hist.*, Ser. 10, 14 (1934): 636. *Type locality*: Rub al Khali, Arabia.

*Specimen*: 1. Haditha, male, skin and skeleton.

*Measurements*: Table II gives the external measurements of this specimen and of two others of its species, as recorded from Arabia by Pocock (1935a: 450-52). Cranial measurements of this specimen and of the series from Arabia reported by Pocock are given in Table III.

The specimen from Haditha constitutes the first record for Iraq. The species is not known to the Royal Hunt of Baghdad. This little fox was caught in a steel trap set on a rock outcrop at the crest of a small hill about 3 km. southeast of K-3. In the shelter provided by the outcrop I had found the dead body of a hedgehog (*Paraechinus*), and there were evidences of many gerbils (*Meriones crassus crassus*).

TABLE II

External Measurements (in mm.) of Three Specimens of  
*Vulpes rüppelli sabaea*

Locality and Sex	Head-body	Tail	Foot	Ear
Haditha, ♂	434	291	111	90
Arabia, ♂	425	290	100	100
Arabia, ♀	395	270	100	95

TABLE III

Cranial Measurements (in mm.) of Three Specimens of *Vulpes rüppelli sabaea*

Locality and Sex	Total Length	Condyllobasal Length	Zygomatic Breadth	Postorbital Breadth	Interorbital Breadth	Pm <sup>4</sup> Length	M <sup>1</sup> Width
Haditha, ♂	100	96	53	..	21	10.5	10.0
Arabia, ♂	105	101	57	21	21	10.0	10.0
Arabia, ♀	100	97	57	19	19	9.0	9.0
Type	97	94	53	20	18	10.0	10.0

It is interesting that this sand fox occurs in the same territory as the tawny fox, *Vulpes vulpes pusilla*, a specimen of which I chased by jeep within a quarter mile of the trapped sand fox. Jackals, wolves, and hyenas also occur in the vicinity. The only rodents secured within a short range of the sand fox were the gerbils, *Meriones* and *Gerbillus*, and the house mouse (*Mus*) in the compound, but there were also jerboa holes nearby, their occupants presumably in hibernation. The soil in the area was hard packed and stony. No drifting sand was seen in the region.

*Fennecus zerda* Zimmermann

Fennec fox

*Canis zerda* Zimmermann, *Geogr. Ges.*, 2 (1780): 247. Type locality: Sahara, and other parts of North Africa behind the Atlas Mountains.

Morrison-Scott (1939: 199) referred to a specimen found near Kuwait which was donated to the London Zoo and which is now in the British Museum (BMNH 25.8.4.1).

Ursidae

*Ursus arctos syriacus* Hemprich and Ehrenberg

Syrian brown bear; dub (Arab.); manga mar, gamash (Kurd. at Sulaimaniya), wurch, hurtch (Kurd.); dibba (Neo-Syriac); khers (Pers.); ayi (Turk.). Quba (at Mosul in 1830, according to Ainsworth).

*Ursus syriacus* Hemprich and Ehrenberg, *Symb. Phys.*, 1 (1828): signature a, Pl. 1. Type locality: Near village of Bischerre, Mount Makmel, Lebanon.

Bears continue to inhabit the mountain areas of Iraq. Ainsworth (1838: 38) reported them in Kurdistan in the 1830's and Layard (1852: 131, 148) wrote of sheep and bullocks killed by bears, and of the villagers of Berwari who would not venture out after dark for fear of bears. Sanborn (1940: 161) reported two specimens obtained by the Field expedition, one from Baradust, the other a captive. Field (1955 b: 61) reported a bear shot high on Jabal Baradust. Its measurements in inches were head length 15, base

of ears to tail tip 64, breadth between ears 8, right paw 7.5 x 5.5. In the Iraq Natural History Museum is a mounted pair collected in northern Iraq in 1947 by Tawfiq Wahbi. Bears were reported to me as present, but rare, east of Sulaimaniya.

Charles A. Reed has contributed the following original material on bears in Iraq:

In the area I was in [northeastern Iraq], bear was found only in the northern part of Erbil Liwa, and even there (except around Bola in the very northern part) was regarded as rare. There seemed to be no knowledge of bear in the eastern part of Kirkuk Liwa, where our camp was in the spring. I do not know about the mountainous parts of Mosul and Sulaimaniya liwas.

Bears are very destructive to sheep and young goats, and so are killed whenever possible. They have also been known to kill humans, but only when wounded or cornered.

In the high mountains around Bola, in the corner between Turkey and Iran, bear is one of the three commonest large mammals (the other two are wolf and pig). In this part of Iraq there is more forest than elsewhere in my experience, and so perhaps there is a correlation here between the forest, the pigs, and the bears. In this area the bears will go well above timberline, digging for bulbs and rodents (or so I assume; anyway they do a lot of digging). The only thing I could be certain about in the scats, however, were seeds of the common wild apple.

In early December in the mountains above Bola the bears were not yet in hibernation, which event, I was told, coincides with the first deep snows (often earlier than December).

I saw two bears near Bola, but managed to collect only one. The first was a normal-sized adult with long belly-hair reaching to the ground. The other was a young female, with a very pale pelt, unlike anything that anyone had ever seen.

In the Bola area, at least, bears are not eaten. When I roasted heart and liver over an open fire and offered some to my hunters, they declined with hurried thanks. The animal had not had its throat cut, and so was not acceptable, but I doubt if they would have eaten it anyway.

In the northernmost part of Erbil Liwa, bear is the only large mammal that is commonly found above timberline.

### Mustelidae

#### *Martes foina* Erxleben

Beech marten, stone marten; sinsar, sansar (Arab.); dalac, darakah, kooshesh (Kurd.); khuja (Neo-Syriac); khaz (Pers.); sansar (Turk.).

*Mustela foina* Erxleben, *Syst. Regn. Anim.*, 1 (1777): 458. *Type locality*: Germany.

*Specimen*: 1. Mosul market, native skin.

In Iraq the marten is probably confined to the hill forests. Three good skins were seen in the market of Amadiya (at the equivalent of \$22 to \$28 for raw skins). It is possible that this marten should be referred to as *Martes foina syriaca* Nehring, but specimens are inadequate for subspecific diagnosis.

Earlier reports of the species in Iraq are by Sanborn (1940: 160) who noted a trade skin from Rawanduz; Field (1955b: 60) who listed it as known on Jabal Baradust; and Harrison (1956a: 262) who obtained two specimens at Narwa near Amadiya. Marten bones were recovered from Shanidar Cave at depths of 3 to 12 feet (Solecki, 1953: 86-87). Martens were reported close to the present border of Iraq from Persia (Cheesman, 1920: 334) and from Turkey (Ainsworth, 1838: 39).

*?Mustela nivalis* Linnaeus

Weasel; bahrnawahnk (Kurd. in Erbil Liwa)

*Mustela nivalis* Linnaeus, *Syst. Nat.*, ed. 12, 1 (1766): 69. *Type locality*: Province of Vesterbotten, Sweden.

The sole basis for including a weasel (*Mustela nivalis* on the grounds of geographic probability) in a list of Iraq mammals is a report from the Zagros Mountains in Erbil Liwa given to Charles A. Reed by Shaikh Pousho's hunters. They told him of the "bahrnawahnk," which they described as a short-tailed animal about 10 to 12 inches in length that was "green" in the spring and white in the winter when only its eyes are black. The forelegs were said to be somewhat shorter than the hind legs. The bahrnawahnk reportedly lives in the forest and goes underground when pursued.

*Vormela peregusna syriaca* Pocock

Marbled polecat, tiger polecat; abulfiss (Arab.); gor-halcana, fissosah ?, khorabahshah ? (Kurd.).

*Vormela peregusna syriaca* Pocock, *Proc. Zool. Soc. London* 1936, 1936, p. 720. *Type locality*: Tiberias, Syria. *Range*: To western Iraq. Lists and figures a specimen from 64 km. S Mosul.

*Specimens*: 1. A stuffed-out, smoke-stained skin found hanging in a shop in Kirkuk market. In the Iraq Natural History Museum is a mounted specimen (No. 1) obtained at Mosul in 1950 by Ibrahim Rassan. Bashir Allouse reported (*in litt.*) another specimen secured in mid-1955, at Al Qosh, 45 km. N Mosul.

Ainsworth (1838: 39) reported the "polecat" abounding near Aleppo, Syria, where it was called "Eben Aarse." In Iraq, the locality records suggest that *Vormela* is an inhabitant of the steppes and foothills of the north.

The "fissosah" is an animal described to Charles A. Reed by Shaikh Pousho of Erbil Liwa and his hunters as the size of a marten, spotted black, brown or gray, with a tail about 8 inches long. It eats the same food as the marten, and has a valuable pelt. I assume it to be *Vormela*.

*Mellivora capensis wilsoni* CheesmanRatel, honey badger; rorejri, gherir, dhirban, dhrambul (Arab.); kurabash, gor-halcana ("grave robber," Kurd.; also used, according to my informants, for *Meles*, *Vormela*, and *Spalax*); kurabash (Neo-Syriac).*Mellivora wilsoni* Cheesman, *Journ. Bombay Nat. Hist. Soc.*, 27 (1920): 335. *Type locality*: Ramhormoz, Iran. Alt. 500 ft. A second specimen from Baksai, Iraq-Iran frontier.

Ainsworth (1838: 39) reported the ratel as a mammal of the mountains

and Schmarda (1853: 408) listed it for Mesopotamia, probably on the basis of Ainsworth's report. A specimen from T-1 in western Iraq was listed by Sanborn (1940: 160). A clear description of a ratel was given under the Arabic name *rorejri* by Musil (1927: 75-76), who encountered the species in the ravines above Rawa, Al Jazira.

Charles A. Reed (*in litt.*) stated that the mountain Kurds have no word for badger and no knowledge of that animal. I was told at Sulaimaniya, however, that badger occur nearby. I do not know whether these are *Mellivora* or *Meles*. An experienced hunter at K-3 did not know of either form in that vicinity. Field (1955b: 60) reported a badger at Jabal Baradust which he presumed to be *Mellivora capensis wilsoni*.

*Meles meles* Linnaeus

Badger; ghreir (Arab.); gor-halcana (Kurd.); porsuk (Turk.); gur-kan (Pers.).

*Ursus meles* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 48. *Type locality*: Uppsala, Sweden.

A mounted specimen in the Iraq Natural History Museum is reported to have been collected in a Baghdad cemetery by Tawfiq Wahbi in 1948. Sanborn (1940: 160) listed a specimen from Qali Ali Beg.

*Lutra lutra* Linnaeus

Common otter; kelb el mai ("dog of the water," Arab.); su-iti (Turk.).

*Lutra lutra* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 45. *Type locality*: Uppsala, Sweden.

*Specimens*: 2. Tigris River, near Al Zuhour Royal Palace, Baghdad; Mosul market, trade skin.

*Measurements*: Adult (Baghdad), head-body 780 mm., tail 450.

The Baghdad specimen was presented to the Iraq Natural History Museum by the late King Faisal II on December 1, 1954. At K-3 I was shown the skin of an otter, believed to be of this species, which had recently been trapped on the Euphrates. I was told that fishermen at Hindiya Barrage catch many otters, which abound there because of extensive fish netting in the river at that point.

Earlier Iraq records of otter are those of Ainsworth (1838: 29), who reported them in the Tigris and Euphrates; Kinneear's mention (1916: 28) of reports and a specimen; Cheesman's listing (1920: 336) of a specimen from Amara; and Sanborn's report (1940: 160) of one from Qalat Salih near Amara.

Hayman (1957: 710), in describing *Lutrogale perspicillata maxwelli* (see below), raised doubts about the reliability of earlier reports of otters from Iraq, for two of three otters brought from southern Iraq by Gavin Maxwell were the smooth-coated otter, not previously identified from Iraq, and the third was the common otter.

An informant at Sarsank did not know of otters in the mountain

streams, but the remains of many partially eaten crabs on the banks indicate the need for a check. Danford and Alston (1877: 275) reported that otter were "not uncommon [in Asia Minor], especially in the trout streams of the Taurus." It seems probable that the species ranges through all of the major streams of Iraq from the Persian Gulf to the northern frontiers.

*Lutrogale perspicillata maxwelli* Hayman

Iraq smooth-coated otter

*Lutrogale perspicillata maxwelli* Hayman, *Ann. Mag. Nat. Hist.*, Ser. 12, 9 (106) (1957): 710. *Type locality:* Abusakhair, 56 km. SE Amara, on the Tigris, Iraq.

*Specimens:* 2. Tigris River, near Al Azair, female, immature male.

*Measurements:* Adult female, head-body 625 mm., tail 375, foot 112, ear 26.

The recognition of a second species of otter in the marshes of Iraq is a matter of great interest.

Viverridae

*Herpestes europunctatus pallipes* Blyth

Small Indian mongoose; jeraidy el nakhl, jerd el nakhl ("palm rat"), abul irris (Arab.); karmasichan (Turk.).

*Mangusta pallipes* Blyth, *Journ. Asiatic Soc. Bengal*, 14 (1845): 346. *Type locality:* Kandahar, Afghanistan.

*Specimen:* 1. Mosul market, native skin.

This small mongoose, which David L. Harrison (*in litt.*) noted as common along the rivers, but never in his experience occurring in desert terrain, was reported by Cheesman (as *persicus*, 1920: 332) and Pitman (1922: 475) from Basra, Amara, and Baghdad. Sanborn (1940: 159) listed a skull from Baghdad as *persicus*. A specimen obtained at Hilla in 1947 is exhibited in the Iraq Natural History Museum. A mongoose which Munir Bunni reported seeing in a dusty clover area at Hilla was presumably of this species.

*Herpestes edwardsi ferrugineus* Blanford

Indian gray mongoose; jeraidy el nakhl, abul irris (Arab.); karmasichan, yerkopegi (Turk.).

*Herpestes ferrugineus* Blanford, *Proc. Zool. Soc. London* 1874, 1874, p. 661, Pl. 81. *Type locality:* Larkhana, Sind, India.

This larger mongoose, which Ellerman and Morrison-Scott (1951: 296) listed for Iraq, is not represented by any specimen known to me

unless a large mounted specimen in the Iraq Natural History Museum is this form.

### Hyaenidae

#### *Hyaena hyaena hyaena* Linnaeus

Striped hyena; dhaba (Arab.); kamtiar, hafdiar (Kurd.); hafdiar (Neo-Syriac); kafftar (Pers.); sirtlan (Turk.).

*Canis hyaena* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 40. *Type locality*: Benna Mountains, Laristan, southern Persia.

*Specimen*: 1. Mansuriya Al Shatt, adult female, February 18.

*Measurements*: Head-body 1120 mm., tail 265, foot 220, ear 143.

Hyenas have been reported for Iraq since the time of the Euphrates expedition. Ainsworth (1838: 38) noted them as common, and Schmarda (1853: 408), probably on the basis of Ainsworth's report, included the hyena in his list. Kinnear (1916: 5) noted a specimen; Cheesman (1920: 332) reported a specimen from Ur and sight records near Basra and Al Falluja; Capper (1921) gave sight records for the left bank of the Tigris between Amara and Shaikh Saad; Pitman (1922: 475) noted their occurrence at Al Falluja, in the broken country near the junction of the Tigris and the Shatt al Adhaim, and northward along the Nahrwan Canal to Ad Dawr. Field (1955b: 60) reported hyenas on Jabal Baradust. Near Haditha he removed several skulls and mandibles of hyenas from a cave (Lawrence, 1956).

Charles A. Reed told me that the hyena is found all through the mountains of Erbil Liwa, but nowhere in abundance. A hunter reported a single hyena at Chamchamal.

I saw dens and tracks at Ctesiphon, and Mansuriya al Shatt. At the entrance to a den at Mansuriya al Shatt were a number of porcupine quills, and native hunters aver that porcupines use hyena dens. Scats were seen in Wadi Haqlan near Haditha. Reports of the hyena's local occurrence were obtained at Basra, Ctesiphon (one had been shot recently), Baghdad (although the Royal Hunt had not seen any for several years), Baquba, Habbaniya (three entered the Royal Air Force Base in 1951; others were seen on the Ar Ramadi road); Haditha (where they are reported to visit the town nightly and occasionally to gain access to the compound of K-3), and Sulaimaniya. They apparently are uncommon in the mountains.

Although a scavenger, the hyena also takes live food. At Ctesiphon a hyena is reported to have killed a white horse; at Mansuriya al Shatt, a donkey. The hyena in each instance was subsequently killed. A European resident of Baghdad when living in Palestine had kept as a pet a hyena which he had seen pick up a tortoise on the desert, crush it, and eat it. Thereafter the hyena was commonly fed living tortoises. The stomach contents of the specimen from Mansuriya al Shatt were too far digested to be accurately identified, but they consisted chiefly of the entrails and small bone fragments of a large mammal.

The specimen contained no embryos and the uterus was small.

Much superstition attaches to the hyena. A native hunter circumcised our specimen, and I was told that among the uneducated one who carries such a charm is considered immune from danger when traveling. A sweeper asked for the eyes of the hyena with which to make medicine to heal the eyes of a neighbor's child, then decided against taking them lest the medicine fail and he be accused of substituting the eyes of another animal.

The report of the spotted hyena in Iraq (Metaxas, 1891: 322) is undoubtedly in error, although the species occurred in western Asia in the Paleolithic.

### Felidae

In regard to the Arabic names for the wild cats, Corkill (1930: 232) said: "What is 'gurta' to one man is 'herreh' to another and merely 'bizoon' or 'saba' to a third; 'washa' is another common name for a 'big cat.'" "Kuth" in Arabic is cat; "wahshee" is wild.

#### *Felis catus* Linnaeus

Domestic cat; kuth, kutta, bizoon (Arab.); pesheela (Kurd.); kedi (Turk.); gorbeh (Pers.).  
*Felis catus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 42. *Type locality*: Uppsala, Sweden (Thomas, *Proc. Zool. Soc. London* 1911, 1911, p. 136).

House cats are commonly kept, or tolerated, in every permanently settled area which we visited. A visitor to Baghdad can see the full range of color pattern of the species among the large population of feral cats that infest the lawn of any riverside hotel. Metaxas (1891: 324) wrote that cats were often kept by the Bedouins though there would seem to be little advantage to a nomad in keeping cats. Thesiger (1954) notes that few cats are kept by the Swamp Arabs.

Whether there is interbreeding between *Felis libyca* and *F. catus* in Iraq is not reported. I saw a domestic cat in Sulaimaniya marked precisely like *F. libyca*.

#### *Felis libyca iraki* Cheesman

Indian desert cat

*Felis ocreata iraki* Cheesman, *Journ. Bombay Nat. Hist. Soc.*, 27 (1920): 331. *Type locality*: Kuwait. Also one from Shaikh Saad on the Tigris.

Specimens in the Iraq museum from Baghdad and Diwaniya (Nos. 28 - 29) appear to be this species. They have well-marked leg bars, short ear tufts, and moderately long tails. The backs of the ears are red.

Pitman (1922: 475) reported seeing a cat, which may have been of this species, beside the Tigris between Kut al Imara and Baghdad. He described it as smaller than *Felis chaus*, grayish buff in color, and spotted blackish.

*Felis libyca nesterovi* Birula

African wild cat

*Felis ornata nesterovi* Birula, *Ann. Mus. Petrograd*, 21 (1916), suppl.: i-ii. *Type locality*: "Nachr-Chasasch," southern Iraq.

There appears to be no second record for this cat.

*Felis chaus furax* de Winton

Jungle cat, booted cat, swamp lynx; bizoon, bizoon el berr, cot-wahshee (Arab.); pesheela-kaywee, pisheek-kaywee, kitkakive, kithakaywee (Kurd.); katakivi (Neo-Syriac); gorbaya vahshi (Pers.); pishik (Turk. in Iraq), yaban kedi (Turk. in Turkey).

*Felis chaus furax* de Winton, *Ann. Mag. Nat. Hist.*, Ser. 7, 2 (1898): 293. *Type locality*: Near Jericho, Palestine.

*Specimens*: 2. Hilla; Dujail, male.

*Measurements*: Adult male (Dujail), head-body 745 mm., tail 280, foot 189, ear 80.

The common wild cat of the river bottoms is *Felis chaus*. It was reported as common by Ainsworth (1838: 37-38) and by Kinnear (1916: 5), who mentioned a specimen. Cheesman (1920: 330) listed 7 specimens from Iraq, including ones from Amara, Qalat Salih, Madij, and Shahrabani. Pitman (1922: 475-76) caught one between Al Qurna and Al Azair and saw others along the Tigris between the Shatt al Adhaim and Ad Dawr. Sanborn (1940: 159) reported a specimen from the "Hilla Desert."

Hunting by car in the early evening along the banks of the flooded Hilla Canal, we flushed a jungle cat in the brush at the water's edge. The cat ran at about 32 km. per hour along the river road. When fired at, it put on a burst of speed and disappeared in heavy cover. Other animals active in the area at the same hour were wild pig, jackal, ducks, black partridge, and a host of frogs.

*Felis lynx dinniki* Satunin

Caucasian lynx, forest lynx, red lynx; wishek, wahrshek, wushak (Kurd.).

*Lynx dinniki* Satunin, *Mem. Cauc. Mus.*, Ser. A., 1 (1915): 391. *Type locality*: Northern Caucasus.

*Specimen*: 1. Baghdad market, native skin.

The lynx is presumably limited to the forest and brushlands of the north and east. Ainsworth (1838: 38) first reported it "in the woody districts," presumably of northern Iraq. A richly colored specimen from Zakho, collected by Captain L. Fitzpatrick, is in the British Museum (labeled *L. pardina orientalis*). A Kurd living in Baghdad referred to the lynx as being "fairly common." Charles A. Reed (in a personal communication from Erbil Liwa, dated December 20, 1954) reported that two were

brought into Shaikh Pousho's village during the winter of 1953-54 and that other reports indicated that lynx occurred all over the mountainous area of Erbil Liwa but were exceedingly rare.

*Felis caracal schmitzi* Matschie

Caracal, desert lynx; iftah, niss (Arab.); kara-kulak ("black ears," Turk.).

*Felis (Caracal) caracal schmitzi* Matschie, S. B. Ges. Fr. Berlin 1912, 1912: p. 64.  
Type locality: The Dead Sea region, Palestine.

The caracal must be rare in Iraq for there are only a few references to it. Kinnear (1916: 5) referred to a specimen from Mesopotamia, and Cheesman (1920: 330) wrote that the only authentic record known to him for the area was a specimen obtained by Loftus at Dezful, Persian Mesopotamia; possibly the same one cited by Kinnear. Corkill (1930: 232) published a photograph of an animal shot near Rutba which he identified, apparently correctly, as a caracal. Aharoni (1930: 332) referred to the caracal as frequent in Mesopotamia, but I wonder if he did not have *Felis chaus* in mind. Dickson's report (1949: 465) of lynx in Kuwait and north-eastern Arabia must refer to the caracal, and presumably the red-haired and black-eared lynx of Metaxas (1891: 323), reported in the region of Basra, was also the caracal.

*Panthera pardus* Linnaeus

Leopard, "snow leopard" in Iraq; nimr (plural, anmar; classic Arab.), fahad, namir (spoken Arab.); pling (Kurd.), palang (Kermanji Kurd.); nimra (Neo-Syriac); plang, babr ("tiger," Pers.); leopar, pars, kaplan, ushek (Turk.).

*Felis pardus* Linnaeus, Syst. Nat., ed. 10, 1 (1758): 41. Type locality: Egypt.

*Specimen:* 1. Baghdad market, native skin.

Leopards in Iraq live in the mountains, where they are said to hunt wild goats and sheep, and are occasionally found in the lowlands. Charles A. Reed has provided these notes about the mountain areas.

Leopard, it is commonly agreed, is very rare everywhere in the mountains of Erbil and Mosul liwas. I did not collect one, although one of my hunters was particularly keen on getting a leopard, since he had shot two the winter before (on Harir Dagh), and so had a reputation to maintain. Even he, however, admitted that seeing two in one year was unusual, and said that some hunters had been in the mountains twenty years without ever having seen one.

Leopards (always called "tigers") are said not to be so destructive to livestock as wolves and bears, but I could never manage to understand whether this was because they are rarer than wolf and bear, or because they would be less destructive even if they were as numerous as these two.

Pocock (1930b: 78) recorded a skin from Rawanduz; Field (1955b: 60) reported them on Jabal Baradust. Robert Angorly of Maqil states that a Colonel Penant shot one in 1945, just above Kut al Imara, and that they

live in the Poshtkuh mountains across the Iranian border, but descend to the plains during severe winters. Metaxas (1891: 322) reported their occurrence on the right bank of the Euphrates. Three leopards were reported (Musil, 1927: 75) to have been shot in the summer of 1911, above Al Emerije, near Rawa, where these cats live in rocky ravines. My specimen from the Baghdad market, and a mounted specimen in the Iraq Natural History Museum, accessioned in 1950, are without data. That leopards were familiar to the ancient Assyrians is attested by the frequency with which they were depicted in early art (VanBuren, 1939: 10).

The leopards of Iraq, to judge by the two skins which I have seen and by the frequent references to "snow leopards" in the Zagros, are very light in color. Hunters in Iraq told me, however, that not all leopards were light in tone. The legend of the snow leopard of western Asia has been recorded and ably refuted by Danford and Alston (1880: 51), and by Pocock (1930a: 76, 324).

The specimen from Rawanduz reported by Pocock in his revision of the panthers was referred to *Panthera pardus saxicolor* of Persia. The light specimens of Iraq would seem to be better grouped with *P. p. tulliana* of Asia Minor.

*Panthera leo persica* Meyer

Lion; saba, asad (classic and spoken Arab.), labonaa (female, classic Arab.), labwa (female, spoken Arab.); sher (Kurd.); aslan (Turk.).

*Felis leo persicus* Meyer, *Dissert. Inaug. de genere Felium* [Vienna]. *Beytr. Anat. des Tiegers*, 1826, p. 6. Type locality: Iran.

The lion has been conspicuous throughout the course of Mesopotamian history, and became extinct only after the use of rifles had become widespread. Earliest cylinder seals from Protoliterate times portray the lion (Frankfort, 1955: *passim*); pairs of lions are shown attacking flocks defended by herdsmen (MacKay, 1925: 59). In Assyrian times the lion figured prominently in the great royal hunts. In dramatic sculptural reliefs Assur-bani-pal is shown on foot slaying lions; also shown are other hunts from chariots, and boats. A lion is portrayed attacking a boat; a wounded lion is shown dragging its hind legs and coughing blood; others are dead, with priests pouring libations over the corpses (Gadd, 1936: Pls. 37, 38, 45; Budge, 1914: Pls. 12, 42; Meissner, 1920, 1: Figs. 50, 197, 198). Assur-nasir-pal II had engraved on a stela at Nimrud (circa 879 B.C.) his boast that he slew 450 lions and captured 20 alive for his zoo, where he bred them (Wiseman, 1952: 24). A good summary of the Assyrian records was presented by Houghton (1877: 322-26).

In 1807, Olivier (4: 392) described five lions from Basra seen in the menagerie of the Pasha of Baghdad. Chesney (1850, 1: 108) noted that lions were not numerous in Mesopotamia in 1835-37, but in his report of 1868 (pp. 71, 89) he told of a lion he saw in 1855 on the Euphrates between Ana and the great bend in the river above Haditha. Lady Blunt (1896: 77-80), following the river in 1878, found that lions occurred near Racca

(Syria) and below. A Bedouin was killed by a lion near Racca in 1875. The buffalo-raising Afuddli tribesmen hunted lions by wounding them with spears and driving the buffalo in to trample the beasts. Along the upper Euphrates, Lady Blunt noted, the lions inhabited the thick tangle of tamarisk, bramble, and honeysuckle which extended back from the river, and where wild pig abounded. But, she observed, a lion was shot along the Tigris in 1881 at a point where there was no jungle. Layard (1852: 271) noted that lions were frequently encountered on the banks of the Tigris below Baghdad, but rarely above, and that on the Euphrates they were found almost as high as Bir (far below the locality reported by Chesney). Layard (1859: 415) told of a tame lion which roamed the bazaar at Hilla, feeding from the butcher's stalls without interference. He also wrote (p. 481) of the abundance of lions in the marshes of southern Iraq, and of a method the Arabs used to capture lions in their dens.

Ainsworth (1838: 37), reporting from the Euphrates expedition, wrote that the lion was met along the lower reaches of the Tigris and Euphrates. He noted a brown lion from the banks of the Tigris, then captive in Baghdad, and wrote that lions were found "as far north as Balis." Kinnear (1920: 33-37) quoted reports that lions were abundant around Mosul in 1840, but rare by 1848-49. A "Babylonian lion" living in the London Zoo in 1862 had been presented as a cub in 1856 (Weinland, 1862).

Many records of lions are found in the diaries of Joseph Swaboda, who operated a steamer between Basra and Baghdad late in the nineteenth century. His notes on lions were published by Serkis (1951) and Kasper-Khan (1951) in the *Iraq Times*, the English-language newspaper of Baghdad. Because these issues are generally unavailable, the records are abstracted here. Swaboda noted lions as follows:

- 1865, Qalat Salih
- 1866, Memshlah (Iran), Seleucia, Seajafla
- 1869, Fort Baghdadiah
- 1870, Fort Baghdadiah, Dawr Reach, Sened
- 1874, Shejar, Shedif, Humenich, Sened, Al Azair (where a lion killed a man), 4 were shot on March 19 when the river banks were flooded — 3 were females and one was a male measuring 9 ft. 5 in. (28.25 m.) long and weighing 420 lb. (190 kg.)
- 1876, Fort Taaj, Baghdadiah Reach (one lion shot)
- 1877, An Nasiriya
- 1878, below Al Azair (one lion shot)
- 1881, Al Muntafiq
- 1884, Huwayzah (killed a man)
- 1887, Gutnyeh, Rubaiya
- 1889, Husamah district

The Swaboda journals were not completely reproduced in the articles in the *Iraq Times*, and there is no reason to believe that, even for those trips for which his records are published, Swaboda noted all lions seen or known to him. They were, obviously, relatively common in the period covered.

In 1876 Blanford, in discussing the distribution of the lion in this region (p. 29), wrote that "at the present day [it] is found in Mesopotamia on the west flanks of the Zagros and east of the Tigris Valley and in the wooded range south and south-east of Shiraz."

Metaxas (1891: 321), who lived in Iraq in the 1880's, wrote that lions were less commonly seen than formerly, but were still found in the jungles of lower Mesopotamia near the Persian frontier as well as on the banks of the Euphrates.

Additional records from the nineteenth century and earlier were summarized by Kinnear (1920: 33-39) and Harper (1945: 293-94).

Although the lion is now extinct in Iraq, its disappearance has been quite recent. The Berlin Zoo was given a pair of Mesopotamian lions in 1909 (Kinnear, 1920: 37). Two captive lions, alive in Baghdad in 1912, were reputedly taken as cubs near An Nasiriya. Harper (1945: 293) quoted reports by Edward Thompson (*The (London) Times*, Aug. 19, 1932) that a lion cub was brought through an Arab village near Sanniyat in 1916, a lioness and cubs were seen near Ahwaz, Persian Mesopotamia, in 1917, and a lion was shot in the wadi marshes that same year. Robert Angorly of Maqil told me that the last Iraq lion was killed in 1918 on the lower Tigris. Cheesman, about 1918, wrote from Iraq that he and Sir Percy Cox had news of a lioness and her cubs not far from their headquarters (Pocock, 1930a: 641).

Becker (1934) found in his search for evidence of the survival of lions in Iran and Iraq that a lion was killed near Shiraz in Iran in 1923 and that the body of a lion was found in the Karun near Ahwaz about the same year. In the reedy swamps on the lower Euphrates and Tigris no traces of lions were found and Becker concluded that the military activities of World War I had accounted for the last lions there. As recently as 1931 (Sinclair, 1938) these cats were reported by a party of American engineers who, in the wild and mountainous region around Dezful in Iran, saw a pair of full-grown lions that showed no fear. Walter Koelz reported (*in litt.*) that he was told that lions still existed in the Karun jungles of Iran when he was collecting there in 1944, but he discounted the stories.

No specimen of Mesopotamian lion appears to have survived, though a lion killed in 1874 at Al Azair was preserved at least until 1917 as a mounted specimen in a Baghdad residence.

*Acinonyx jubatus venaticus* Griffith

Cheetah, hunting leopard; fahad, taiha (Arab.)

*Felis venatica* Griffith, *Vert. Anim. Carnivora*, 1821, p. 93. Type locality: India.

The cheetah, which is rapidly approaching extinction in the plains and deserts of Iraq, is well known but not often recorded, and is not represented, so far as I am aware, by a single Iraq specimen. Ainsworth (1838: 37) reported it not uncommon in the low districts of the Tigris and Euphrates, and saw a captive in Baghdad. Danford and Alston (1880: 52) quoted a report of a cheetah killed among rocks near Sevi, a small village on the upper Euphrates, in Mesopotamia. Bedouins trained cheetahs for gazelle hunting in the nineteenth century, according to Metaxas (1891: 323).

Corkill (1929: 700) told of a cub secured at Jumaimu, Muntafiq, in

1925, and two cubs taken near Al Busaiya in the Shamiya Desert. Robert Angorly reported cheetahs rare in the desert west of Basra and recalled having shipped one from Basra in November, 1926. The cheetah was reported for Kuwait by Dickson (1949: 465).

A hunter at K-3 reported to us that cheetahs occur in that area, principally to the westward in the Syrian desert between the Tripoli and Haifa pipelines. We also heard that southeast of Baghdad the Arabs hunt for them (not with them), but that the people of the Haditha district fear them. A commonly sold post card in Baghdad shows a captive cheetah, probably one kept by the late Mr. Eastwood in his private zoo.

Since about 1950 four cheetahs have been killed in Saudi Arabia, just south of the Iraq border, according to Lee Merriam Talbot (*in litt.*, 1956). He learned that those nearest Iraq were "a few miles south and some miles east" of the intersection of the Saudi Arabian, Jordan, and Iraq borders, where employees of Aramco, working on the Tapline project, killed the animals.

#### PROBOSCIDEA

##### *Elephas maximus* Linnaeus

###### Elephant

*Elephas maximus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 33. *Type locality*: Ceylon. *Elephas maximus asurus* Deraniyagala, *Proc. Fifth Ann. Sess. Ceylon Assoc. Science*, Pt. 3, 1950, p. 11. *Type locality*: Euphrates valley.

The inclusion of elephants as members of the indigenous fauna of Iraq is based on several records. In early Mesopotamian art only one representation of the elephant is known. It is from the Late Akkad period (circa 2100 B.C.) on a seal of Indian style from Tel Asmar. On this seal an Asiatic elephant is depicted with a rhinoceros and a crocodile. The stone is generally believed to be one brought in from the Indus Valley where these three species were native (Frankfort, 1955: Pl. 61). On the Black Obelisk (see Layard, 1853: Pl. 56) an Asiatic elephant is shown in the tribute of Musri to Shalmaneser III (859-824 B.C.). The Assyrian kings, Tiglathpileser I (1115-1102 B.C.), Adadnirari II (911-889 B.C.), Assur-nasir-pal II (884-859 B.C.), and Shalmaneser III, all recount the elephants they killed. The Broken Obelisk records of Tiglathpilesir I: "Elephants with his bow he brought down and... elephants he captured alive." He took some of them alive to his city of Assur. Assur-nasir-pal II boasted that he slew 30 elephants (Hilzheimer, 1926: 143-45; Budge and King, 1902: 136, 205).

In view of the fact that no other representations have been found, Van-Buren (1939: 177) suggested that these elephants were merely animals brought in tribute or used to stock royal hunting parks. Yet animals are shown in early art for mystic or curative reasons, not just as decorative accessories, and many animals which were abundant are not depicted; thus, the rarity of elephants in the record is not necessarily evidence that they were not present.

In Iraq physical evidences of elephants (other than carved ivory) are

apparently confined to two teeth. At Barda Balka an unerupted molar of an Asiatic elephant has been recovered in Upper Pleistocene deposits (perhaps 100,000 years old) in association with implements of Acheulean type (Wright and Howe, 1951: 109, and letter from F. C. Fraser to R. J. Braidwood). In the Iraq Natural History Museum is a molar from Lake Habbaniya, which Deraniyagala has identified as "*E. maximus asurus*" (Bashir Allouse, *in litt.*).

There are several documents indicating that the elephant was indeed common as a wild animal in the area west of present-day Iraq and, possibly, along the Euphrates in this kingdom. The Egyptian Pharaoh Thutmose II (1508-1504 B.C.), after his return to Egypt from an Asiatic campaign, depicted on the walls of the temple of Hatsepsut a record of his tribute from the vanquished, recording elephants from Nij. Thutmose III (1482-1450 B.C.), after the capture of Nij in 1464 B.C., organized a great ivory hunt against a herd of 120 elephants, and in the hunt was saved from a charging elephant by his general, Amenhep, who cut off the elephant's trunk (Breasted, 1919: 271, 304; Hilzheimer, 1926: 143-45; Arnold, 1953: 77; and others). Although this hunt has generally been supposed to have taken place along the Euphrates east of Aleppo, Gardiner (1947: 163), on rereading the original, would put the elephant hunt during the return journey from Aleppo, and thus in the hills southwest of that city, perhaps along the Orontes.

The head of an elephant femur, Robert Braidwood told me, was recovered from among hearthstones on the plains of Antioch (now in Turkey) at a site dating between the fifteenth and thirteenth centuries B.C.

In summary, there appear to have been Pleistocene elephants in Iraq, similar to modern Indian elephants, although the two known teeth could have been carried to Iraq from a remote area. The Assyrian kings of Mesopotamia hunted elephants at least until the ninth century B.C., but the records are not conclusive as to where the elephants were hunted. If the Gardiner translation of the Thutmose hunt near Nij is accepted, it is only a presumption that elephants in that period occupied the Euphrates basin. The elephant is not mentioned in the later Babylonian texts and it may be assumed that the last of the Syrian-Iraq elephants was gone. The introduction of the horse as a domestic animal, about the fifteenth century B.C., may have helped to make the hunts more successful.

The Mesopotamian elephant, it appears, was a sacrifice to the quest for ivory and to sport, and perhaps, as Dodge (1955: 20) suggested, a victim of overgrazing by goats, which made the country unsuited to elephants through resultant aridity and steppe formation.

#### SIRENIA

The dugong, which ranges into the Gulf of Aqaba (Bertram, 1943), appears to be unrecorded for the Persian Gulf, but it is perhaps worth noting here that a cuneiform record from the fourth archeological period of Uruk (circa 3600 B.C.) is said to mention a dugong (Landsberger, 1934: 71).

## PERISSODACTYLA

## Rhinocerotidae

*Rhinoceros unicornis* Linnaeus

## Indian one-horned rhinoceros

*Rhinoceros unicornis* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 56. *Type locality*: "Probably the sub-Himalayan Tarai of Assam" (Lydekker, 1916, 5: 48).

The indications that the rhinoceros was indigenous to Mesopotamia consist, as far as I can determine, of three records: the finding of a single lower cheek tooth of a rhinoceros at Barda Balka (*in litt.*, F. C. Fraser to R. J. Braidwood, July 16, 1952) where an elephant molar was also found; the depiction of an Indian rhino on the seal from Tel Asmar that shows an Indian elephant and a crocodile (Frankfort, 1955: 45); and the Black Obelisk figure.

The Barda Balka site, at which Acheulean and Mousterian types of artifacts occur, was interpreted by Wright (1952: 12) as having been occupied at the very beginning of the last (Würm) of the four glacial stages of the Pleistocene and is of great antiquity. Palestine, in the late Pleistocene, had rhinoceros in its fauna. Bate (1937: 221) reported remains in caves of Mt. Carmel, and Vaufrey (1951: 199) recorded a tooth from upper Acheulean deposits. These findings are, however, referred to other species: *Rhinoceros merki* and *R. cf. hemitoechus*. The rhinoceros tooth from Barda Balka may also be from an extinct species, and may indeed have been carried far. The Tel Asmar seal was evidently carried from the Indus valley. The Black Obelisk of the ninth century B.C. shows a procession of animals being sent to Shalmaneser III in tribute. One animal is probably intended as a rhinoceros; the others are an elephant, a Bactrian camel, a nilgai, a bull, and three monkeys.

Thus, there is at present no evidence to show that the rhinoceros was part of the Iraq fauna after the time of Barda Balka.

## Equidae

*Equus hemionus hemippus* I. Geoffroy

Onager, Syrian wild ass; wahash ("the wild one"), razali (Arab.); akhdar; dziggetai, ghar-khor (in India).

*Equus hemippus* I. Geoffroy, *C. R. Acad. Sci. [Paris]*, 41 (1856): 1214. *Type locality*: Syrian Desert between Palmyra and Baghdad.

The little wild ass, or onager, which was broken to harness by the Sumerians before the advent of the horse, is almost surely extinct in Iraq, a victim of modern guns. Perhaps the earliest historic reference to it is by Xenophon (1949 transl.: 36), who reported encountering large herds of these animals during the military campaign of 401 B.C., across the flat desert bordering the Euphrates in what is now eastern Iraq. By the time of the British Euphrates expedition (1835-37) the wild ass must have been

rare, for Chesney (1850, 1: 108) reported it as only "occasionally seen," and noted a skin obtained by the natives. In 1842 wild asses were seen in the Sinjar region between Mosul and the Khabur by Layard (1850: 265; 1859: 228). He presented to the British Museum the skin of an eight-month-old animal, taken in Mesopotamia before 1852 (Lydekker, 1916, 5: 14). Lady Blunt (1896: 82), following the Euphrates in 1878, described a yearling which ran with horses at Racca, Syria. Metaxas (1891: 325) wrote from Iraq that onagers were then disappearing, but that they were to be found at Ras el Ain near the source of the Khabur. Several other nineteenth-century reports have been published by Carruthers (1935: 147-49).

Hilzheimer (1941: 4) quoted Oppenheim's observation that the severe winter of 1910-11 completely killed off the onagers in the region of Tell Halaf, and he noted that Aharoni, who obtained some skins about 1908 near the junction of the Euphrates and Khabur, reported the wild ass exterminated there by 1930. Hilzheimer also wrote, "Today fourteen live on a narrow strip of land that stretches from Mosul southeastward to Iran." This undocumented statement indicates longer survival in Iraq than has generally been supposed.

Musil, traveling along the Euphrates in 1915, recorded (1927: 156) that his guide related that he once shot a wild ass "called *razali*, near the well of al-Hlewet," on the left bank of the Euphrates, near Ar Ramadi. In the course of a trip in 1912 Musil noted (p. 74) that in Al Jazira a short distance above Rawa and Ana and "north of the cones of Tweren rises the mesa of al-Gane and northwest of it the mesa of Abu Mahamer. By the last-named there is a very shallow well of the same name, visited now and again by wild asses. These rare animals graze on the plain of al-Burrejze and have their hiding places in the ravines near Abu Mahamer, where hunters often lie in wait for them. Our guide, Gamel, alleged that he had once seen there a herd of about sixty asses, both large and small." Lee Merriam Talbot informed me that Colonel R. Meinertzhagen recalled having seen onager in 1914 and 1920 at Hadda, 48 km. west of Mosul, where they lived in country that had over 10 inches of rain annually — land that is now under cultivation. Raswan's account (1935: 129) of a herd seen near Sinjar in the late 1920's is the last trustworthy report known to me.

The literature bearing on the progressive elimination of the species (and on the problem of whether there were two species in the Syrian Desert) was ably reviewed by Harper (1945: 367-71).

The contribution of archeological activities to the history of the onager is limited, but shows promise of being significant. Equid teeth and bones have been recovered in many digs but at this writing none of the material has received adequate systematic treatment.

The onager may sometimes be recognized in early art by its short ears, erect mane, stalklike tufted tail, thick neck, and slender legs. A most realistic representation of the animal is part of a rein ring cast in electrum, which was found at Ur in the death-pit of Queen Shub-ad (circa 2700 B.C.; Woolley, 1934: 78 and Pl. 166). The Royal Standard of Ur also clearly depicts the onager, harnessed in fours to four-wheeled chariots

(*ibid.*: Pl. 92). Although Hilzheimer once interpreted these animals as mules (1931: 1), Woolley (1934: 272) capably refuted that identification. In this Hilzheimer later agreed (1935: 133), conforming with Hinton, Pocock, Adametz, and Antonius (Woolley, 1934: 272). Amschler (1936: 510) reached similar conclusions.

An Assyrian sculptural relief from Nineveh shows the wild ass with superb fidelity (Houghton, 1877: 347; Hilzheimer, 1941: 7), and here its horselike character is readily apparent. An illustration of an Assyrian relief, showing three onagers, one struggling in nooses, may be found in Meissner (1920, 1: Fig. 51).

*Equus asinus* Linnaeus

Domestic ass, donkey; himaar, zoumal (Arab.); kat, ker, nairac ker (jackass), ma ker (female), jasha ker (young) (Kurd.); eshek, merkeb (Turk.).

*Equus asinus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 73. *Type locality*: "Asia."

*Specimens*: 2. Near Basra, skulls with mandibles.

The ass, early brought from Africa as a domestic animal, is the principal beast of burden in the Iraq agricultural lands. In art it is differentiated from the onager by larger ears and stubbier legs, but I have not seen any convincing representations from early periods. Crossbreeding of *Equus asinus* with the onager was practiced in the mid-nineteenth century (Carruthers, 1935: 147-49). Today it is commonly used in the agricultural areas of Iraq for riding, draft, and transport. The official census of 1947 reported 432,484 donkeys in Iraq (Williamson, 1949: 48).

The white riding breed, known as Hadharat, was raised south of Hilla (Metaxas, 1891: 429). Layard (1859: 404) noted the occurrence in Baghdad of these white asses which, decorated with henna, were ridden by priests and men of law.

*Equus asinus x Equus caballus*

Mule; baghal (Arab.); katir (Turk.).

Mules did not, of course, appear in Mesopotamian pictures before the time of the horse, but in Assyrian times they are shown being ridden, hauling chariots, and carrying burdens. At this time, too, cuneiform texts imply crossbreeding of asses and horses (Layard, 1859: 392; VanBuren, 1939: 35). Possibly the onager was also bred to horses in Assyrian times (Antonius, 1932: 376).

Mules are not uncommon in Iraq today and excellent stock is much used by the Iraq army.

*Equus caballus* Linnaeus

Horse; hisan (Arab.); asp (Kurd.); at, beygir (Turk.).

*Equus caballus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 73. *Type locality*: Scandinavia.

The domestic horse is believed to be the descendant of the tarpan, an extinct wild horse of western Europe, though the Akkadian name for horse means "animal from the East" (Houghton, 1876: 56). Horses were introduced into Mesopotamia near the close of the third millennium B.C. by way of the Khabur, although they were not numerous until the middle of the second millennium. They did not reach Egypt until approximately 1550 B.C. and were not used in Arabia until about the time of Christ.

The Assyrian horses, used in hunting and warfare as mounts and to haul chariots, were a large, sturdy breed resembling the modern Hanoverian. They are elaborately represented in mural sculpture of the first half of the first millennium B.C. Discussions of the history of the horse in Mesopotamia can be found in Hilzheimer (1935: 135-39); Antonius (1932), and Woolley (1934: 273).

Today's horses in Iraq, although rarely of distinguished lineage, are classified as of two breeds: a light Arab type and (in Kurdistan) the Kurdi, a light pony. Both are used for riding, pack, and harness. Many horses are used as military mounts and, at Baghdad, for racing. The official census of 1947 reported 194,038 horses in Iraq (Williamson, 1949: 48).

#### ARTIODACTYLA

##### Suidae

###### *Sus scrofa attila* Thomas

Wild boar, hog, pig; khanzir wahshee (Arab.); baraz (Kurd.); khuzara (Neo-Syriac); grahz (Pers.); yaban domuz (Turk.).

*Sus attila* Thomas, *Abstr. Proc. Zool. Soc. London* 1912, 1912, p. 393. *Type locality:* Kolozsvar, Transylvania. (I refer Iraq hogs to this form on the basis of the statement of range given in Ellerman and Morrison-Scott's checklist.)

*Specimens:* 3. 30 km. N Hilla, male, skull; Lasini, 20 km. S Hilla, male, skull; Mansuriya al Shatt, skull and scalp. In the Iraq Natural History Museum, one newborn, mounted skin, no data.

Other recent records for wild pig in Iraq are Ainsworth's note (1838: 40) that they were common in every suitable spot; Metaxas' observation (1891: 323) of their abundance and destructiveness; Kinnear's mention (1916: 8) of pig in Iraq; Cheesman's record (1920: 325) of pig seen and caught by British troops; Pitman's numerous sight records (1922: 480) for the years 1916-17 for the river valleys near Kut al Imara, Baghdad, Ad Dawr, and the valley of the Shatt al Adhaim; Sanborn's listing (1940: 161) of specimens obtained by Field's party near Amara, near Khanaqin, and at Baradust; and Field's listing of them (1955b: 60) for Baradust where a carcass was found at snow line. Thesiger (1954: 281) told of killing 488 wild pigs in two years around Hor al Hammar. A sportsman's account of pig hunting in the southern marshes, supported by good photographs, is that of Page (1954).

Wild pig are abundant in the parts of the river valleys where there is sufficient cover and they are occasionally reported on the open plains. In the mountain areas they are said to spend the summer in river bottoms

and to winter in oak woods on the hill slopes. They are reported to be common on Pig Island in the Tigris just below Baghdad. In the vicinity of Hilla they are found in thickets, and in fields where cover is adequate. In late winter when the water is high the animals are found in shallow flooded areas along the river at the edge of the town. Pigs occur in the reed beds skirting Hor al Hammar. In the lakeside village of Medaiche is a large casuarina growing on an elevated, mat-bound block of soil, the only survivor of pig depredations of several trees planted a few years ago. Drower (1949: 375) recorded that pigs live in the marshes of Hor al Hawaiza and that they occasionally attack boats or even automobiles. North of Baghdad we hunted them in the maze of trails and rootings on the left bank of the Tigris at Mansuriya al Shatt. Three were taken by Royal Air Force personnel near Lake Habbaniya. In the vicinity of Haditha they occur chiefly among the reeds in the valley of the Euphrates and on its islands, although I also saw tracks in Wadi Haqlan. To the east of Baghdad, in the vicinity of Badra, pigs were reported wallowing in pools in the open country during late winter. At Sulaimaniya they were reported to be abundant and very destructive to the rice fields. At Sarsank, too, they were said to be common.

Pigs are hunted for sport, by both Christians and Moslems in Iraq, but the Moslems are usually unwilling to touch the animals and it is therefore sometimes difficult to secure help in handling a large specimen. Hunting is usually done on foot because of the nature of the river thickets and the sport is rather dangerous. Thesiger (1954: 281) hunted them by boat in Hor al Hammar. I saw one European hunter who carried a 20-inch scar on his leg which had been inflicted two years earlier by a boar that was killed at muzzle point. The meat of wild pig is occasionally sold in Baghdad. The estimated weight of the large males taken near Hilla was 300 lb. (136 kg.) each. Thesiger (*loc. cit.*) reported this as the weight of one he shot in the southern marshes.

Charles A. Reed has contributed the following material:

Although I had great difficulty in getting a wild pig, and finally did get but one specimen, it is not classed as a rare animal by any of the hunters I met from the hills and mountains of Mosul Liwa, Erbil Liwa, or Kirkuk Liwa. At Bola, in the top-most corner of Iraq where Iraq, Turkey, and Iran come together, wild pig was classed as one of the three commonest large wild mammals (the other two are bear and wolf). In winter, at Bola and adjoining villages, it is shot by village hunters to feed their dogs. In oak forests near Bola (the only undisturbed forest I saw in Iraq) I saw much pig sign and very fresh tracks, but I did not see a pig there myself, although my Iraqi assistant from the Iraq Natural History Museum did.

Around Bola the pigs do go up to timberline, about 5,500 feet, and may well range higher.

About December 3, 1954, at the Bekme dam site (upper end of Bekme gorge, between Mosul and Erbil liwas), 7 pigs were seen very near the construction camp, and the local Agha reported a band of 25 to 30 in the immediate vicinity. However, an organized hunt by the construction engineers, complete with the Agha, his native beaters, and an ambush with riflemen failed to produce any pigs.

The one pig I did get (that is, in addition to three very young ones) was from the hills fringing the eastern part of Kirkuk Liwa. I went to the spot where the sow had been shot; the country is completely cut over, without even brush in the wadi bottom where she had been living, and the only cover was a bit of tall grass. The general area was only half a

mile from a village, and the whole environment, I would say, would be a difficult one for survival of wild pigs, yet they do manage to hang on in limited numbers. The one I caught had a stomach full of chewed grass.

I estimated the weight of the young sow I collected at 250 lb. (114 kg.). Anyway, these are large pigs; the natives in the north of Erbil Liwa were somewhat loath to try to get one, as they said that even if they shot one they couldn't get it out, since their small mules or horses couldn't carry the load. At the time I thought they just didn't want to hunt pig, but later I believed them.

The habits of the pigs in the southern marshes were described by Thesiger (*loc. cit.*). He reported that they build nests of rushes in which they sleep during the day. Such nests may be six feet across and two feet or more in height. The pigs are said to breed in April and May and to produce four or five young in a litter. Reed told me that at Jarmo, about May 1 when the shoats were two to three weeks old, a sow was obtained that had been nursing.

*Sus scrofa* Linnaeus

Domestic hog, common pig; khanzir (Arab.); khoog (Pers.); domuz (Turk.).

*Sus scrofa* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 49. *Type locality:* Germany.

In Iraq pigs have rarely been pictured, either now or in past millenia. A notable exception is a realistic Assyrian relief, found by Layard (1850) at Nineveh. However, domestication appears to have been early. Dyson (1953: 665), summarizing the incidence of pig bones in village refuse, stated that they constituted 1 per cent of the bones recovered at Karim Shahir, 10 per cent at Jarmo, and 15 per cent in Period III at Anau (Russian Turkestan), an increased usage with passage of time that indicates domestication. Pocock (1934a: 409) found the pig bones recovered at Ur too small for those of the wild boar. Hilzheimer (1941: 27-32), on the basis of a long series of pig bones and teeth recovered from Tel Asmar, also reported evidence for extensive influences of domestication and concluded:

In general, pigs were left to roam about very freely, and possibly interbreeding with wild pigs still occurred occasionally . . . Individual pigs may then, in order to be used as offerings or for fattening or for some other purpose, have been kept in narrower confinement. This would explain the extensive effects of domestication observed in individual cases in which, so far as the formation of the skull with short jaw bones is concerned, these ancient specimens are hardly inferior to highly domesticated modern pigs.

Today about 85 per cent of the Iraqi are Moslems and in consequence little pork is used. Pigs are not kept except at Baghdad where two pig farms supply the non-Moslem trade.

## Hippopotamidae

*Hexaprotodon asurus* Deraniyagala

"Assyrian hippopotamus"

*Hexaprotodon asurus* Deraniyagala, *Spolia Zeylanica*, 26 (1951): 127. *Type locality:* Mesopotamia.

The allegation that the hippopotamus occurred in Mesopotamia in historic times rests chiefly on the assumption that certain Phoenician terracotta figures from Byblos, in the Beyrouth Museum, were based on Mesopotamian animals, and were not copies of Egyptian figures. Deraniyagala (1951) has postulated that these figures were based on a fossil genus, *Hexaprotodon*, and has proposed the specific name *asurus*.

## Camelidae

*Camelus dromedarius* Linnaeus

Camel, dromedary; jamal, bair, naka (female), dulul (Arab.); wushtur, hushtur (Kurd.); deve (Turk.).

*Camelus dromedarius* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 65. *Type locality:* Deserts of Lybia and Arabia.

## Specimen: 1. Desert near Samawa, skull.

The history of the dromedary in Iraq is obscure. That it was known to the Sumerians is indicated by a clay statuette from Uruk, attributed to the Kassite period (1600-1150 B.C.; VanBuren, 1939: 36, and Mikesell, 1955: 241). A later record of the dromedary in Mesopotamia is that on the bronze gates of the Assyrian king, Shalmaneser III (859-824 B.C.; Mikesell, *loc. cit.*). Assyrian representations may be found in Layard (1853: Pl. 56), King (1915: Pl. 24), and Gadd and Smith (1938: Pls. 19, 21).

Camel bones have not been reported from Mesopotamian archeological sites so far as I know, but Lawrence (1956: 80) found them abundant among undated deposits in an animal den near Haditha. Fossil bones have been found (Carleton Coon, *in litt.*) in Paleolithic deposits of the Syrian Desert near Palmyra, and Vaufrey (1951) reported a Palestinian find.

Camels are almost by definition limited to the Bedouin tribes. They carry the tents and possessions of the people who tend the sheep in the plains and desert fringe and carry wool to market, but for every camel one sees burdened there are fifty, it seems, that are unoccupied. Neither the Arab, Christian, nor Yezidi farmers of the river valleys have them, nor do the Swamp Arabs or the Kurds in the mountains. But camels are not confined to the deserts; one sees them in early winter pasture in the hills between Kirkuk and Sulaimaniya. I was told, however, that it is only during years in which forage is particularly scarce in the lowlands that the animals are pastured as high as Sulaimaniya. During the winter I saw them in the fields near the Euphrates at Al Falluja, at Mosul, and at many places in southern Iraq. A caravan rarely enters Baghdad today, and when one does it is usually following secondary roads.

Camels are still abundant in Iraq. The 1947 census figure of 306,566 camels (Williamson, 1949: 48) is 50 per cent larger than that for horses. Their importance for transdesert passage is, however, rapidly diminishing. In 1923 camel postal service between Damascus and Baghdad was supplanted by motor transport.

*Camelus bactrianus* Linnaeus

Domestic bactrian camel

*Camelus bactrianus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 65. *Type locality:* Bokhara.

Both dromedary and Bactrian camels figure in Mesopotamian art but are not prominent until the Assyrian era about 1000 B.C. Both species must have been introduced as domestic animals. The Bactrian is mentioned in the reign of Tiglathpileser I (1115-1102 B.C.; Mikesell, 1955: 241) and is shown on the Black Obelisk among the animals sent in tribute to Shalmaneser III (859-824 B.C.). A figure is also reported from Nippur (VanBuren, 1939: 36).

Although I know of no Bactrian camels in Iraq today, Ainsworth (1838: 40) wrote that the common Turkoman camel in Asia Minor is a hybrid between the one- and two-humped species — a combination which, according to Legge (1936: 21), is usually the result of crossing a male Bactrian with a female Arabian camel. The hybrids, produced for their adaptability to stony ground and severe weather, are said to be single-humped.

Giraffidae

*Sivatherium*

Siva's giraffe

*Sivatherium* Falconer and Cautley, *Journ. Asiatic Soc. Bengal*, 4 (1835): 706. *Type:* *Sivatherium gigantium*, Siwalik Hills, India.

A Sumerian copper rein ring, a chariot fitting from the "3500 B.C. level of Kish," shows an animal which has been tentatively identified by Colbert (1936: 605) as the fossil giraffe, *Sivatherium*, on the basis of the small frontal horn cores and palmate parietal horn cores. The same figure had earlier been interpreted by Laufer (1930) as a stag which, because of the representation of a long heavy rope from the animal's muzzle, he presumed to have been a captive tamed animal. Similar ropes, which are apparently reins or halter ropes, may be seen on representations of deer from Ur.

*Sivatherium* is known from the Pleistocene of India and, evidently, of Africa where it is associated with human artifacts. Teeth of this giraffe are mentioned by Field (1953a: 274) as having been found in 1934 in a cave on Jabal Baradust that contained long bone fragments and debris

from the Aurignacean age. It is thus not unreasonable to postulate that this giraffe did survive in Mesopotamia into the time of the early Sumerians.

### Cervidae

The general difficulty of identifying the species of animals in early art finds ample illustration in Mesopotamian objects, and most of the reports in the literature can be discounted. Authors not adequately acquainted with the fauna of the region have frequently called a figure a "stag," without meaning more than that it was an antlered deer. The artist may have been trying to represent the stag (*Cervus elaphus maral*), the fallow (*Dama mesopotamica*), the roe (*Capreolus capreolus*), or just an abstraction of a deerlike animal. In many instances the artist may not have been acquainted with the animals he portrayed. The representations are in many media. They are painted on pottery, intaglio-cut on stamp or cylinder seals, cut in mosaic, or sculptured and cast in copper, silver, or gold.

Reproductions of archeological representations of deer abound in such well-illustrated works as those of Frankfort (1955), Woolley (1934), Van-Buren (1939), and Legrain (1936). In these accounts of species I have given my own interpretation of some of the animals pictured, but I believe that a great number of the animals portrayed cannot be named. Thus, for example, I do not believe one can identify the gold "stags" on Queen Shub-ad's diadem (Woolley, 1934: Pl. 141b), which Woolley (*ibid.*: 30) called fallow deer; or the figure on the gold fillet (*ibid.*: 299 and Pl. 139). Other representations such as those shown on seals in Woolley (*ibid.*: Figs. 216, 298, 548) and Frankfort (1955: 15, "caprine"; 320, 515, 877, 959, "stags"; and 826, "coarse animal design") seem too stylized for recognition.

#### *Dama mesopotamica* Brooke

Mesopotamian fallow deer; ayyal (Arab.); yamurcha (Turk.)

*Cervus (Dama) mesopotamicus* Brooke, *Proc. Zool. Soc. London* 1875, 1875, p. 264.  
Type locality: Khuzistan, Luristan province, Iran.

The fallow deer, characterized by the long trez tine of its antlers and expanded beam at the trez tine, is sometimes easily recognized in ancient Mesopotamian art by the combination of antler character and spotted coat. A seal dating to the beginning of the First Dynasty of Ur (Woolley, 1934: Pl. 207, Fig. 216) clearly shows a lion attacking an antlered deer that closely resembles the fallow. At Ur, too, was found a shell and lapis gaming board (*ibid.*: Pl. 97) which bears representations of three deer with antlers suggestive of *Dama* and with spots clearly showing on the coat of one. A shell engraving (*ibid.*: Pl. 100) shows an antlered and spotted deer. From the Sumerian city of Jamdat Nasr comes a potsherd which bears a well-delineated painted figure of a fallow deer (MacKay, 1931: Pl. 80). An Assyrian sculpture, showing a fallow stag carried in the arms of a giant winged being, is illustrated by Budge (1914: Pl. 26).

Fallow remains have been reported from the late Pleistocene of Barda Balka (Wright and Howe, 1951: 109). An antler from the archeological site of Harmid is preserved in the Iraq Museum. Remains of fallow are also known from excavations at Uruk and Tell Halaf and the Early Dynastic I and Protoimperial periods (that is, from about 3000 to 2400 B.C.) of Tel Asmar (Hilzheimer, 1941: 20-22). Henry Field obtained an antler fragment and part of a row of lower teeth from an animal den near Haditha and Lawrence (1956: 80) tentatively identified these as of *Dama mesopotamica*. Most of the associated bones were of modern domestic animals and there is a possibility that these fragments are from deer surviving until recent times in the nearby bottomlands of the Euphrates. It is also possible that a deer floating from Turkish Kurdistan as carrion was salvaged by a hyena and brought to the cave.

Although there is abundant evidence that the fallow was formerly present in Iraq, if it is still in existence it is indeed rare. Fallow were common in the Kara Bel and Camda Bel mountains, Taurus range, of Asia Minor in the early nineteenth century (Ainsworth, 1838: 41). Robertson (in Brooke, 1876: 303) stated categorically that the fallow "does not exist in Mesopotamia or anywhere near the Euphrates," and expressed the belief that it was chiefly in the Luristan hills, and that those found along the Karun were only stragglers. Two fallow in the London Zoo were shipped from Basra according to Sclater (1878), but this does not necessarily denote an Iraq origin. Metaxas (1891: 326), who lived in Mesopotamia during the 1880's wrote of the occurrence of fallow along the lower Karun and reported that one had been brought to Baghdad. The Ellerman and Morrison-Scott checklist (1951: 359) recorded a male obtained on July 21, 1917, at Zakho, northern Iraq, but these authors presumed the deer to be extinct by 1951. In 1930 Aharoni (p. 330) wrote that these deer were still living on the banks of the Euphrates, but gave no documentation for his statement. The best recent record is that of Henry Field (1955b: 60) who reported a "stag" (in 1943?) on Jabal Baradust. He has written (*in litt.*, October 18, 1955):

I did not see the stag because it ran through the woods about 500 paces east of our line of march. A Kurd fired at it, thus drawing my attention. He described it as having branched antlers, drawing the outline on the ground with his right forefinger. He also said it was spotted.... Our Kurds said this type of deer was very rare, hence all the excited shouting and the man's chagrin at having missed.

The most recent report to reach me is from Lee Merriam Talbot, who stated that when he was in Iraq in 1955:

Fallow deer were reported as still living in a valley between Maidan and Halabja, near the Persian border, perhaps thirty miles [48 km.] airline north of where the Baghdad-Tehran highway crosses the border. They are in a spot allegedly shunned by man because of malarious swamps in the Sirwan River.

This is far south of the Jabal Baradust locality reported by Field.

Hilzheimer (1941: 20-22) presented evidence that both the European fallow (*D. dama*) and Persian fallow (*D. mesopotamica*) were known to the

Sumerians, and that both are represented in their art. Had Hilzheimer recognized the wide variation in the antlers of *mesopotamica* (see Brooke, 1876), it is unlikely that he would have entertained the possibility of *dama* existing in Iraq.

*Cervus elaphus maral* Gray

Stag, red deer; ayyal ahmar, waal (Arab.); ga-kaywee, khargolik, shoor, shivra (Kurd.); tora, tura shiva (Neo-Syriac); gara kehwee (Pers.); suyuh (Turk.); maral (Russian).

*Cervus maral* Gray, *Knowsley Menagerie*, 1850, Pls. 38, 39. *Type locality*: Persia.

The red deer appears to be represented in early art from Uruk, Tepe Gawra, Tell Halaf, and other sites. A great copper plaque from Al Ubaid, now in the British Museum, shows in full relief a lion-headed eagle grasping two stags (see Hall and Woolley, 1927: Pl. 6). A seal from Ur (Woolley, 1934: Pl. 207, Fig. 216) also appears to represent the stag. What appears at first to be a stag is shown (in Frankfort, 1955: No. 856) on a cylinder seal in the style of the Jamdat Nasr period which was found in deposits of the succeeding Early Dynastic period (circa 3000-2400 B.C.). Frankfort called the six animals depicted "goats." The animal in the upper right is clearly a large-antlered deer and could be identified either as *Cervus* or as *Dama*. The animal to its left is much the same. The third animal in the upper row has unbranched horns and may have been intended as a goat or gazelle. One of the three animals at the lower level is an ox; another kneeling animal appears to have small branched antlers; and the third, in which the details of the head are poorly depicted, is possibly an ox. Another seal which Frankfort illustrated (No. 39) shows a deer that resembles *Cervus* more than it does any other deer of the region.

*Cervus* bones in deposits 25,000 years old from the caves of Hazar Mard were reported by Bate (1930a: 39). At Jarmo (circa 4700 B.C.) bones were found by Charles A. Reed (*in litt.*).

I have been unable to learn of any modern occurrence of *Cervus* in Iraq, although it apparently persists in Turkey and Iran.

*Capreolus capreolus capreolus* Linnaeus

Roe deer; ayyal (classic Arab.), ghazal el jabal, yahmour (Arab.); shehwel, shivet (Kurd.); djeyran, karaca (Turk.).

*Cervus capreolus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 68. *Type locality*: Sweden. *Capreolus coxi* Cheesman and Hinton, *Ann. Mag. Nat. Hist.*, Ser. 9, 12 (1923): 608. *Type locality*: Zakho, northern Iraq.

The roe deer was, according to VanBuren (1939: 43), quite common in ancient Mesopotamia but rarely shown in art. One may well believe, however, that some of the deer identified as "stags" in early Mesopotamian art are roe deer. Such, for example, are sculptured pieces from Ur figured by Woolley: copper stags (1934: Pl. 113) and a silver stag on a silver lyre (Pl. 112).

Cheesman and Hinton (1923) quoted Major Greenhouse in reporting that these roe were becoming very rare, and that one was seen at Jowan Rud (in Iran, near the Iraq border east of Diyala) early in 1922. My own field work turned up no specific reports. In 1955 Lee M. Talbot was told in Iraq that the roe deer were uncommon but widespread in the Zagros Mountains at between 3,000 and 5,000 ft. elevation.

Charles A. Reed reported (*in litt.*, Dec. 20, 1954):

These deer are gone from the northernmost part of Erbil Liwa, and, in Erbil Liwa, seem to survive only on Harir Dagh, and in the mountains around Mergasor. When the "Assyrians" (Nestorian Christians) came to that area in the 1920's the deer were found all over the mountains, but now are limited to the wilder and more rugged parts.

He reported seeing four roe deer in October, 1954, and frontlets and antlers in a hunter's cottage at Batas. He continued:

A male killed on April 12, 1955, still retained the velvet, but another male shot somewhat earlier (the hunter was not certain of the exact date) had already lost all traces of velvet. Shaikh Baba Ali, in Sulaimaniya, said that a few survived in Sulaimaniya Liwa, but only in very restricted localities where some last lingering bits of forest persist. I got conflicting reports from people who should have known the northern part of Mosul Liwa; some said there were deer there, some said not. I don't know.

Robert Angorly of Maqil is of the opinion that a few roe still are to be found in the vicinity of Zakho. At Sarsank we had reports that deer (more likely roe deer than fallow) were recently seen in that area.

#### Bovidae

##### *Boselaphus tragocamelus* Pallas

Nilgai, blue bull

*Antelope tragocamelus* Pallas, *Misc. Zool.*, 1766, p. 5. *Type locality*: Plains of peninsular India.

The nilgai is not known to have inhabited Mesopotamia, but what is apparently a depiction of this species on the Black Obelisk of Nimrud, in parade with a Bactrian camel, a rhinoceros, an elephant, a bull, and monkeys, leads me to include it here. Today the species is limited to an ever-shrinking range in the plains of India. That it may once have had a far greater range is suggested by Vaufrey's report (1951: 200) of a tooth of this species from the cave of Oumm-Qatafa, Palestine. Inasmuch as Vaufrey apparently mistook Bate's report (Garrod and Bate, 1937: 145) of the hartebeest (*Alcelaphus*) in Mt. Carmel for a report of the nilgai ("Bubalis *boselaphus* .... L'Antelope *bubale*"), the tooth identification may need verification.

##### *Bos taurus primagenius* Bojanus

Wild ox; reem (Hebrew); rimu (ancient Assyrian); am-si (Akkadian); urus (Latin).

*Bos primagenius* Bojanus, *Nova Acta Acad. Caes. Leop.-Car.*, 13 (2) (1827): 422. *Type locality*: Hasaleben, Germany (Harper, 1945: 511).

Bones of wild oxen, presumably the urus, are reported from late Pleistocene deposits in Iraq hill locations. Solecki (1953: 86-87), for example, reported as *Bos taurus* bones from Paleolithic deposits which were excavated at Shanidar. At Barda Balka, among numerous teeth of oxen, was a crown of a lower third molar, which F. C. Fraser (*in litt.*) described as large and comparable in length to those of several *Bos primagenius* from Europe. Charles A. Reed (*in litt.*) said that cattle bones were also obtained in excavations at Jarmo, a village site of about 6700 B.C. By the Tell Halaf period (circa 4500 B.C.) the cattle are shown with their horns growing sharply forward, suggesting domestication, but Reed (unpublished MS.) finds very little evidence and no proof to support the frequent references to Halafian domestication. The similarity to the urus of figures of cattle from southern Mesopotamia was noted by Woolley (1934: 301; see also Pl. 167).

In early Assyrian times, wild bulls were frequently depicted, but in later monuments wild cattle are not shown. Assur-nasir-pal II boasted (Wiseman, 1952: 31) that he slew 390 wild bulls and captured 50 for his zoo; this indicates that in the ninth century B.C. the species was abundant on the upper Mesopotamian plains. Additional records of early hunts may be found in Hilzheimer (1926: 159-61), Budge and King (1902: 203, 205), and in most histories of the Assyrians.

The wild cattle (aurochs) are said to have been denizens of the heavy forests in western Europe. We do not know whether they also lived in forests in Iraq or whether they inhabited principally the grassy steppes or the river bottoms. Houghton (1877: 339) believed that in Assyrian times wild cattle inhabited the forests and hills. This hypothesis is weakened by the existence of several Assyrian sculptures showing wild bulls being hunted from chariots, for chariots would not be efficient in hill country or in forests. It is possible, however, that such sport was carried on in flat country with animals released or raised for this royal pleasure.

#### *Bos taurus* Linnaeus and *Bos indicus* Linnaeus

Domestic cattle; hosh, mawashi (plural, Arab.); rashawalakh (Kurd.); sigir (Turk.). Zebu: kerradi (Arab.); Bull: thor (Arab.); ga (Kurd.); boga (Turk.). Cow: haisha (plural, hawaiish), bakara (plural, bakar; Arab.); manga (Kurd.); inek (Turk.). Calf: ijil (Arab.); gorlich, goraba, gewaraka, gowraka (Kurd.). Steer: okuz (Turk.).

*Bos taurus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 71. *Type locality*: Uppsala, Sweden.  
*Bos indicus* Linnaeus, *ibid.*, p. 72. *Type locality*: China.

At the same time that the people of the Indus valley were representing high-humped cattle with lyrate upward-curving horns and heavy dewlap (the animal that we today would call *Bos indicus* or zebu), the Sumerians were representing domestic cattle which, in their bodily proportions and forward-curving horns, closely resembled — or were identical with — the reem, or wild ox, of Mesopotamia. This is the breed of domestic cattle

that was figured throughout the course of Mesopotamian history. The zebu cattle, though dominant in Iraq today, do not seem to have been important until after the fall of the Assyrian empire. Duerst (1899), Pocock (1934a: 409), Hilzheimer (1941: 46), Patterson (1937), and others have discussed the probable derivation of the cattle of western Asia.

The early domestication of cattle by the Sumerians or their contemporaries is evident from a charming frieze of a milking scene from a First Dynasty temple at Al Ubaid (circa 2900 B.C.) which is reproduced in Legrain (1944: Figs. 22, 23), Hall and Woolley (1927: Pl. 31), and other works. Pocock (1934a: 409) compared the cattle whose remains were found attached to the wagon of the king in the great death pit of Ur to long-horned breeds of modern domestic cattle. The remains of domestic cattle found at Tel Asmar were inadequate for race determination but probably belonged, according to Hilzheimer (1941: 46), to the *Bos primagenius* group and perhaps even to the *B. p. frontosus* group. Houghton (1876: 42) pointed out that they were used by the Assyrians for food, draft, and tribute.

Today the herds are of greatly mixed character but the humped profile of Asiatic cattle appears to dominate in Iraq. Although most cattle are scrub mixtures, neglected in conception and maintenance, some poorly marked strains are named. Mason (1951) recognized three types in Iraq. They are (with some data from Williamson, 1949: 58):

Humpless (brachyceros) cattle: Oksh, of the Syrian area; Kurdi, found in Kurdistan. Usually red, brown, or black, small, short-horned, and with a deep forehead. European in origin.

Humped (zebu) cattle: Iraqi; with Jenubi variety, large-humped and of heavy dewlap, golden to bright bay, in southeastern Iraq; Rustaqi variety, an improved breed from Rustam Farm with small hump and little dewlap as found at Hilla.

Mixed cattle: little or no hump, but with marked zebu points. The Iraq variety, of Persian type, is known as Dishti.

Cattle are used in Iraq today for plowing, milk production, and occasionally, in Kurdistan, as pack animals. Their dried dung is widely used for fuel. The beef and hides are also of importance. The census figures of 1947 (Williamson, 1949: 48) showed 559,617 milk cattle and 229,978 cattle under six months of age.

#### *Bison bonasus* Linnaeus

Bison; wisent (German)

*Bos bonasus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 71. *Type locality*: Probably Bie-lowitza, Lithuania (Lydekker, 1913, 1: 35).

The wisent was well known to the people of early Mesopotamia and must have been an inhabitant of the fringing forested hills. Realistic representations of the animal are found on a painted potsherd from Uruk (VanBuren, 1939: 76), as a limestone figure on a First Dynasty temple at Al Ubaid (Legrain, 1925: 106), on an Akkadian seal and as a statuette from Susa (Iran), both shown by Hilzheimer (1926: Figs. 19, 20). A seal

from the Diyala region reproduced by Frankfort (1955: No. 761) shows a water buffalo and an animal that, by reason of its shaggy mane and beard, its short, sharply curved horns, and its tufted tail, can only be a bison. This seal is in the style of Akkad, and is of Larsa time (circa 2000 B.C.). Legrain (*loc. cit.*) identified several "hairy bisons" on seals and seal impressions, but the unsatisfactory reproductions of crudely done seals do not enable me to judge the accuracy of his identifications.

Woolley (1934: 299) described figures outlined on a gold headband from Ur as

... a headless animal which may be a bison, judging by its hooves and shaggy mane, and then a man who is either controlling the bison with a rope or attacking it with a spear while he kneels on one knee.... All the men have long straight beards and on their heads are lines which represent either long hair or a (feather?) head-dress; they should be akin to the bearded hunters on the "Standard" who bring in the wild animals from the hill country.

Oppenheim and Hartman (1945: 171) translated as "wisent" a name in an old Babylonian animal list.

There are numerous figures, in many media, showing bearded bulls at Ur (see Woolley, 1934: Pls. 107, 108, 110, 115, 141) and elsewhere. Their horns resemble those of the wild cattle (aurochs) and their heads are usually not hairy like a bison, but there is no known agriotype combining these characters with a beard. Woolley (1934: 301) gave as one interpretation that such figures represent the bison, known to the artists only as creatures of legend. Amiet (1953) ably reviewed the theories about the man-faced and bearded bulls of Chaldea and Assyria. It is perhaps not unreasonable to suggest that the bearded bulls represent the hill bison, an animal associated with the holy places in the mountains, which the zig-gurats — high pyramids built above the Mesopotamian flat lands — are presumed to represent.

#### *Bubalus bubalis* Linnaeus

Water buffalo; jamoosa (plural, jamoose; Arab.); gamesh (Kurd.); camush, manda (Turk.). *Bos bubalis* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 72. Type locality: Rome, Italy (based on a domestic form).

The water buffalo was apparently indigenous to Iraq. It subsequently disappeared as a wild species, and was reintroduced as a domestic form. The evidence for its early occurrence consists of horn cores from the site of Grai Resh in the Sinjar hills, a village of Uruk culture (circa 3500 B.C.; Lloyd, 1940; 1943: 7). Lloyd considered it probable that the culturally advanced Uruk people, who came into the hills of Iraq from what is now central Turkey, used the water buffalo as a domestic animal. The fact that this species is clearly depicted on cylinder seals of the late Agade period (2750-2100 B.C.) supplements the evidence of the horn cores but does not support the Lloyd hypothesis, for these early representations show the wild water buffalo, with flat, widely flaring horns (VanBuren,

1939: 74; Frankfort, 1955: Nos. 663, 668, 670; Hilzheimer, 1926: Fig. 14; Gardner, 1948: 87, 88). The poses, too, are those usually used for wild animals. The buffalo stand on their hind legs, and are in combat with gods or beasts. Hilzheimer (1926: 157), failing to find representations of this animal after the middle of the third millennium B.C., suggested that they may have disappeared as a wild species by that time. The occurrence on the Babylonian animal lists of about 1500 B.C. of a name translated as "water-ox" (Oppenheim and Hartman, 1945: 171) suggests knowledge of the water buffalo.

An alternate theory is that the water buffalo was first domesticated in the Indus valley by the people of the Harappa and Mohenjo-Daro cultures (which existed from about 3000 to 1500 B.C.) and may have been brought to the valleys of Mesopotamia in this period.

Later introduction was presumed by Smith (1827: 393) who believed that these animals were introduced into Persia and lands to the west by Arabs in the eighth century A.D.

Today in Iraq the water buffalo is a coarsely robust breed. It is common in the river valleys from Basra to Baghdad. Williamson reported (1949: 54) that in 1947 one-third of the population of 132,500 was in Amara Liwa and about one-half divided between Basra, Muntafiq, and Diwaniya liwas. It is extensively used in the agricultural areas as a draft animal and for its milk, butter, cheese, and hides. The Swamp Arabs, Thesiger (1954) wrote, also use buffalo for bride buying and for meat, although they usually slaughter only animals already near death. Bulls are rarely kept beyond the first year because of their pugnacity and expense. Lady Blunt's account (1896: 79) of how the Arabs of the upper Euphrates employed the buffalo in lion hunting is an interesting note from the past.

*Oryx leucoryx* Pallas

Oryx; mahat, wudhaihi (Arab.), wathayhi, abu solo (Arab. in Oman); walrush, bukrus (archaic, Bahrein Island; Pennant).

*Antilope leucoryx* Pallas, *Spicil. Zool.*, 12 (1777): 17. *Type locality*: Arabia.

The presence of the oryx on both sides of the Persian Gulf (at least in recent times) would make its occurrence in Iraq at least presumptive, but no specific locality records supported by specimens are available for Iraq and the species is now quite certainly absent from that country.

It was represented during early civilizations of Iraq. VanBuren (1939: 49) shows a figure of what I consider an oryx (the fairly long, tufted tail is characteristic) on a seal, although this figure was identified as goat by Frankfort. The seal of Bin-kali-sami of Akkad (2700 B.C.) shows what appears to be an oryx (Hilzheimer, 1926: 156). Woolley's identification (1934: 273) of an oryx on the Royal Standard of Ur is clearly an error; the animal is a short-haired sheep, probably wild. The fourth century B.C. Cairn of Hani, 15 km. east of H-5 in Jordan, had representations of three animals which, on the basis of their tufted tails and horns in plane with the facial profile, may be identified as oryxes (Harding, 1953).

What may be Iraq specimens, and possibly the only ones, are recorded from the British Museum by Lydekker and Blaine (1914, 3: 131) as follows: "90.12.20. 1. Skeleton with horns, immature female. Head of Persian Gulf; collected by B. T. Ffinch, Esq. Purchased, 1890," and "7.10.23. 1. Skin, mounted. Mesopotamian Desert. Presented by P. B. Vander Byl, Esq., 1907."

Robert Angorly of Maqil recalled that an oryx, "the last to be shot in Iraq," was taken in 1914.

### *Gazella*

Gazelle; ghazal, idmi (Arab.); ask, mombiz, kalla-ask (male), mamiz (female) (Kurd.); gazal, ah-hoo (Pers.); gazal, djeylan (Turk.).

Although gazelles still roam some parts of the Mesopotamian plain in large herds and there is frequently great slaughter of them when they are hunted from desert-roving cars, I did not take or secure any gazelles and do not have the temerity to do more than list species as they have been recorded by others or are presumed to occur. Their extirpation in many parts of Iraq is an immediate challenge for some zoologist to accompany gazelle-shooting parties in order to salvage a sufficient number of skulls, skins, and data to resolve the taxonomic questions about gazelles in Iraq.

By hunters' report, the females that are found north of Amara are hornless which should make them *Gazella subgutturosa*. In the region of Haditha the gazelles to the west of the river are said by hunters to differ from those east of the river. In southern Iraq there may be two species — a dark form (*G. dorcas saudiya*) and a pale form (*G. leptoceros marica*). *Gazella gazella* should also be found.

Gazelles are common in ancient Mesopotamian art. Highly mineralized gazelle bones have been found in the caves of Zarzi and Hazar Mard (Bate, 1930b: 23; 1930a: 38), localities to which man apparently brought them in the Mousterian age over 25,000 years ago (Libby, 1955: 83). Hilzheimer (1941: 22-26) reported a dozen horn cores recovered from Tel Asmar. Unfortunately too little is known about the species or their comparative osteology for such records to be diagnosed below the generic level.

Among the gazelle specimens that have been reported but not identified are skulls from the Diyala valley, Hinaidi Bridge, Baghdad, Karbala, and two skins, labeled "Iraq," obtained by the Field expeditions (Sanborn, 1940: 162).

A gazelle held captive at Hilla (see Pl. IV) and another at Haditha were both hornless and yet quite differently marked. The Haditha pet, a female slightly more than 1-1/2 years of age, did not have visible horns, but small horn "buttons," masked by the hair, could be felt. It was captured east of the Euphrates, between K-2 and K-3. Published descriptions do not enable me to indicate which of these captives represents *subgutturosa*. Presumably one does, and the other represents another race or species in which the females of this same area are also hornless, for the differences in marking are pronounced.

Gazelles are now abundant in only a few areas. One report of recent date was of a herd sighted between T-1 and T-2 which was so large that a driver had to stop his car and wait for the herd to complete its crossing. An area favored by some Baghdad hunters is the flat plain west of Ar Ramadi, where the animals are easily pursued by car. In the vicinity of Basra, gazelles are said to be greatly reduced in numbers and not to be found near the city. It is perhaps worth recording that in my extensive travel by automobile and on foot the full length of Iraq and in the central plains, I saw wild gazelle only at night when a small band crossed a road near the Syrian border. Had I made a special effort in suitable territory, the record could, of course, have been different. In four passages through the rolling plain traversed by the Kirkuk-Erbil-Mosul road, I saw no gazelles, though Charles A. Reed wrote that he did. He was, however, unable to procure any specimens in these areas and he observed that if hunting continues at the present rate they will not remain numerous much longer. He noted:

With seluki dogs, gazelles are hunted only from horseback and only after a rain. When the ground is soft, so I was told, the small hooves of the gazelles sink into the ground and the dogs have some chance of catching them, but on hard ground the gazelles outrun the dogs every time. A man hunting on foot with selukis will never loose them after gazelles, as he runs too great a risk of never getting his dogs back; he cannot keep up with them, and the dogs are too stupid to find their way back alone. The only instance of conservation that I observed in Iraq was with regard to these gazelles in the Cham-chamal area; the Kurds here will not shoot females.

An adult female gazelle kept captive in the compound of the Y.M.C.A. at Hilla frequently escaped to the streets. It was sometimes away for several hours, and would even go to the congested area of the market, some blocks away. In its own compound, which it shared with a cow and a sheep, it was shy, and particularly bothered by its owners' German shepherd dogs. Another female, kept captive by an engineer at Haditha, was allowed in the interior of the house. This animal would stand with its forefeet off the floor to reach crackers or cigarettes. It drank water from a cup — approximately one cup a day.

The following material concerning gazelles is grouped almost entirely according to the specific designations of earlier writers. Until more specimens have been collected, no one can critically appraise the assortment.

*Gazella subgutturosa subgutturosa* Güttenstaedt

Persian gazelle; goitered gazelle

*Antilope subgutturosa* Güttenstaedt, *Acta Acad. Sci. Petrop.* 1778, Pt. 1 (1780), p. 251.

Type locality: Northwestern Persia.

Gazelles of Iraq from the Persian Gulf to the Zagros have been presumed to be all *subgutturosa*, a species characterized by hornlessness in the females, swelling of the necks of males in rutting season, the extent of the large white area on the buttocks, and inconspicuous facial markings.

Sclater and Thomas (1897-98, 3: 93) reported that females obtained at Basra were sent alive to London in 1852. Lydekker and Blaine (1914, 3: 44) noted the skin of an immature specimen, sent from the Euphrates valley in 1850. Collectors in the British Expeditionary Force obtained four male skulls, two female skulls, and ten masks from Samarra (Cheesman, 1920: 344), which, because the females were hornless may be referred to as *subgutturosa*. Pitman (1922: 479) also commented on these specimens. Charles A. Reed reported (MS.) that there are two males from Kirkuk and one from Erbil in the British Museum. He obtained three males in the Chamchamal area. Hunters in that area reported that females are hornless, and are not hunted. Reed described the range of gazelles in north-eastern Iraq as follows:

They extend to the bases of the first prominent foothills, and then abruptly cease. There are no gazelles on the Diyana plain near Rawanduz, although this would seem to be a good spot for them if they had ever penetrated the mountains. However, one will occasionally find a tame gazelle at a village in the mountains, but in each case the animal was said to come from Erbil.

There are bones of a young gazelle from Shanidar Cave, and this puzzled me, since Shanidar is in extremely mountainous country, but these particular bones are in the very top material, and I think must be explained by the importation of a tame gazelle.

*Gazella dorcas saudiya* Carruthers and Schwarz

Dorcas gazelle; afri (Arab. in Arabia)

*Gazella gazella saudiya* Carruthers and Schwarz, *Proc. Zool. Soc. London* 1935, 1935, p. 155. *Type locality*: Dhalm, about 195 km. NE Mecca, Arabia.

This gazelle, which is reported for Palestine and Syria, may be presumed to occur in western Iraq. Ainsworth (1838: 41) identified the gazelles of the plains of Mesopotamia as the *dorcas* gazelle, which by the arrangement of Ellerman and Morrison-Scott (1951: 392) is now regarded as *saudiya*.

*Gazella gazella* Pallas

Mountain gazelle; ghazal (Arab.), idmi (Arab. in Arabia and in Iraq).

*Antilope gazella* Pallas, *Misc. Zool.*, 1766, p. 7. *Type locality*: Syria.

It is probable that this gazelle occurs in Iraq, for its range extends across North Africa, Palestine, Syria, Persia, and India. There seem to be no identifications of this species for Iraq, however.

*Gazella leptoceros marica* Thomas

Slender-horned gazelle; gazaal, dhabi (Arab.), rhim (Arab. in Arabia).

*Gazella marica* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 6, 19 (1897): 162. *Type locality*: Nejd, central Arabia.

Specimens from Basra, An Nasiriya, and Amara were identified as this species by Cheesman (1920: 343), a nomenclature followed by Pitman (1922: 478).

*Capra hircus* Linnaeus

Domestic goat; miazza (plural, maaz; classic Arab.), anza (classic and spoken Arab.), sakhl (male), sakhlia (female) (Arab.); bizini, bezen (Kurd.); kechi (Turk.).

*Capra hircus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 68. *Type locality:* Sweden.

The domestic goats are now believed to be descended from several wild forms. Amschler (1929, 1930, 1937) did much to define the domestic types but, because of obscure beginnings, plasticity of the stock, hybridization, and selective breeding, the pattern of goat history is confused, and the application of scientific nomenclature to the group fraught with difficulty. Anyone who is tempted to separate pure lines on the basis of horns should note the great variety found in a single wild species, *Capra falconeri*, as is well illustrated in Lydekker's *Catalogue of Ungulates* (1913, 1: 163-72). The basic domestic types, as recognized by Amschler, are these:

1. Horns untwisted, scimitar-shaped and curved in one plane. Domestic breeds of this type are now found only in the Caucasus. *Capra hircus aegagrus* and *C. h. blythi* are wild representatives.

2. Horns openly spiral, that of the left side twisted to the right, that is to say, clockwise. This group includes most of the domestic breeds of Europe, Asia, Africa, and the Americas, and most of the goats identified from Babylonian and Egyptian archeological sites. Specifically included are the Angora and Kashmir goats. No wild type survives, but *C. adametzii* Cromova (= *C. priscus* Adametz and Niezabitowski, a homonym of *Ibex priscus* Woldz), a goat from the Pleistocene of Galicia, is a member of this group although not necessarily ancestral to the rest. The earliest name applicable to the group is, of course, *Capra hircus* Linnaeus, applied to the domestic goats of Sweden. If the domestic goats are not to be considered conspecific with the *aegagrus* group, then *hircus* should not be applied to any living wild goat.

3. Horns open spiral, that of the left side twisted to the left, that is, counterclockwise. Domestic goats of this type are found in the Caucasus, though they are seemingly unrelated to any of the wild types (the *falconeri* group) that are found in Russian Turkestan, Afghanistan, Kashmir, Punjab, and Baluchistan.

4. Horns twisted, clockwise, around a central axis. Many females are strongly horned. This type, of which the Sicilian goat, *C. girgentana* Magliano, is an example, is merely a variety of *hircus*. The Girgentine goat was described by Magliano (1930, 1950) and by Adametz (1940).

The Girgentine goat is considered (Amschler, 1937: 226) to be the same as that represented by the famed gold, lapis, and shell sculpture from Ur known as the "ram caught in a thornbush," and the same as that on the Royal Standard of Ur (Woolley, 1934: Pls. 87, 91). In both representations long wool is clearly shown. The breed was also recognized by Amschler (1937: 227) on an Egyptian relief of about 2000 B.C., and in seventeenth-century representations of goats in the Austrian district of Vorarlberg, near Lake Constance. A horn core from Kish, from deposits

dated about 1000 B.C., was identified by Amschler (1937: 228) as *C. gir-gentana*.

In 1941 Hilzheimer reported (p. 42) two twisted horn cores from Tel Asmar which he considered clearly recognizable as "*Capra prisca*" (*C. hircus*). These cores rise vertically from their base and then turn outward. The breed, he noted, is usually pictured in Mesopotamian art with sheep that have spiral horns, not with those carrying horizontal horns. Many varieties of domestic goat were depicted in Assyrian sculpture (Houghton, 1876: 45).

In modern Iraq, two breeds of goats were recognized by Mason (1951). The Kurdi, found in the north, is similar to the Angora and is raised primarily for fleece. The other breed is the all-purpose Syrian mountain goat for which there are varietal names of Mamber, Iraqi, and Djebal. The goats in the south are usually small and black.

Iraq goats are often herded with sheep, and these flocks, economic necessities to the Iraqi, are also serious liabilities, for they divest the mountains of vegetation that would bind the soil, check runoff, and provide fuel. The herds are widely dispersed in the mountains and steppes. In winter the flocks of the nomads are found in the valleys. With the coming of spring they are moved out onto the deserts to feed on the emerging vegetation. The census of 1947 reported 1,965,304 goats and about one-quarter this number of sheep (Williamson, 1949: 48).

#### *Capra aegagrus* Erxleben

Wild goat, "ibex"; anz el jabal, maaz jebeli, maaz wahshee, cheevee (near Erbil) (Arab.); nairee, naira-kaywee, kala-kaywee (male), bizini-kaywee (female or general), bizini-chia, bizini-shakh (Kurd.); yaban kefisi, yaban kechi (Turk.); bozay koohee (Pers.); izza tura (Neo-Syriac).

*Capra aegagrus* Erxleben, *Syst. Regn. Anim.*, 1777, p. 260. *Type locality*: Daghestan district of the Caucasus, southeastern Russia.

Wild goats (commonly and erroneously called "ibex" by English-speaking people in Iraq) occur in the high mountains of the north and east. An undocumented skull with horns is in the Iraq Natural History Museum. Two skeletons from Baradust and horns from Barzan near Aqra are in the Chicago Natural History Museum (Sanborn, 1940: 162). The six specimens obtained by Charles A. Reed are reported below. A hunting party of the late regent Emir Abdul-Ilah collected wild goats in mountains near Erbil on November 18, 1953.

Goat bones have been identified from early archeological sites in the hills. They were reported from Moustierian-age deposits in Hazar Mard caves near Sulaimaniya by Bate (1930a: 39). Paleolithic deposits in Shanidar Cave have also yielded goat bones (Solecki, 1953: 86-87).

Reports of wild goats are frequent. Several herds were seen on the mountain slopes near Zawitha, north of Mosul, by Layard (1852: 148). Field (1951: 17, and 1955b: 60) reported seeing goat tracks high on Jabal Baradust. I was told at Sarsank that wild goats were common in the region, although goat hunters usually made a two-day trip from the village

to get these animals. I saw goat horns set into the walls of a church at Sarsank and a building at Amadiya, and Field (1936), noting that the horns are symbols of strength and endurance, reported two buildings similarly decorated: a Kurdish house at Aqra and a tomb of a Yezidi saint at Badri.

Charles A. Reed wrote:

In Erbil Liwa the wild goats seemingly have much the same distribution as do the roe deer, but are also known from Safin Dagh. They are undoubtedly more numerous than the deer, but in recent years much hunting by professionals hired to feed survey and engineering crews is cutting the population heavily (75 are known by me to have been killed in two summers for the crew of engineers making the preliminary surveys for the Bekme Dam). Both sexes are hunted. Like the deer, they have disappeared from the northernmost part of Erbil Liwa, but only within the last eight or ten years.

Hearsay evidence would indicate that wild goats are distributed throughout the mountainous parts of Mosul Liwa, but the only definite evidence I have is that one of the six specimens I procured came from Berat Dagh, on the Mosul Liwa side of the rim of the Bekme Gorge. They are said to be present, but rare, on Jabal Sinjar.

All through Erbil Liwa I was told that wild goats did not exist farther south in the Zagros Mountains, but this is incorrect; two females were brought to me from Jabal Zhargahta on Suqrimah Dagh in eastern Kirkuk Liwa, in the foothills of the Zagros Mountains due east of the Braidwood expedition's camp at Jarmo. Elevation approximately 5,000 ft.

One would expect these animals in the mountains of Sulaimaniya Liwa, but I have no evidence that they occur there.

At Sulaimaniya I was told of several wild goat - domestic goat hybrids bred in captivity a few years earlier at Halabja. They were reported to be "long-haired and exceptionally ugly."

#### *Ovis orientalis* Gmelin

Wild sheep; kabsh el jabal ("mountain sheep"), ghrennum (in Erbil Liwa) (Arab.); marakaywee, paza-kaywee, cull (ram) (Kurd.); koochi koohee (Pers.); koch, yaban koyun (Turk.).

*Ovis orientalis* Gmelin, *Reise Russ. Reichs*, 3 (1774): 432, 486. *Type locality*: Eastern part of Elburz Mountains, Iran (N. Nassanov, *Distribution Géographique des Moutons Sauvages du Monde Ancien*. Petrograd, 1923. Pp. iv + 255, 20 pls., 65 figs.).

There appear to be but three specimens of wild sheep preserved from Iraq. One of these, reported by Linda Braidwood (1953: 129, misidentified as a wild goat), is represented by a skeleton which Charles A. Reed has identified as a young female wild sheep. A second is one secured by Reed on March 28, 1955, near Kanispika on the flank of the high ridge known as Baranand Dagh, Sulaimaniya Liwa, at an elevation of approximately 4,500 feet. The third specimen was shot in the mountains of Erbil Liwa on November 28, 1953, by a royal hunting party. It is said to be preserved as a personal trophy. General Obeid Abdulla told me that he shot others in the Zagros Mountains near the northern frontier. It should be a particular objective of collectors to bring adult specimens of this sheep to the Iraq Natural History Museum or to a similar institution where their identity can be more firmly established. Skeletons of such

animals would be important in identifying bones from archeological deposits.

The possibility, suggested by Hilzheimer (1941: 32), that short-tailed *Ovis orientalis* and long-tailed *O. vignei* occur in Iraq is unsupported by present evidence.

Hunters who secured the wild sheep for Reed confused female wild goats and female wild sheep, claiming the former were sheep. Both sexes are hunted.

*Ovis aries* Linnaeus

Middle East fat-tailed sheep; ghanam (Arab.); marr (Kurd.); koyun (Turk.). Ram: kabash (Arab.); baran (Kurd.). Ewe: naaja (Arab.); maal (Kurd.). Lamb: teli, hamal (classic Arab.); barkh (a yearling), kawer (a lamb about 18 months old), shekanair (a two-year-old male), shekamay (a two-year-old female) (Kurd.).

*Ovis aries* Linnaeus, *Syst. Nat.*, ed. 10, 1'(1758): 70. *Type locality*: Sweden.  
*Ovis laticaudata* Linnaeus, *loc. cit.* *Type locality*: Arabia.

The domestication of sheep is believed to have begun in the early Neolithic villages of western Asia, such as Jarmo (R. Braidwood, 1952).

Although bones from the Paleolithic site of Shanidar Cave have been identified by Henry Setzer as from *Ovis aries*, the domestic sheep, it is doubtful whether the lower deposits of Shanidar could contain domestic animals, nor has it yet been demonstrated that bones of early domestic sheep can be distinguished from those of wild sheep.

Hilzheimer (1941: 33) divided the domestic sheep of ancient Mesopotamia into three types:

1. Sheep with hair, not wool, and possessing pendant ears. The male was maned and had horizontal corkscrew-shaped horns. The female had neither mane nor horns. The tail was relatively short, 10 to 15 cm. long, that is, about half the length of the thigh. The breed is known from Early Dynastic to Gutian times (circa 3200 to 2200 B.C.). Bones of this breed have been found at Tel Asmar. Similar sheep occur today in Abyssinia and at Timbuktu.

2. Sheep with wool and a very short, lean tail 10 cm. long at most. The rams had heavy horns, coiled spirally about the erect or pendant ears. The females were hornless. This is the breed that was milked. The face in profile was strongly convex. Pictures from Kish which show no wool may represent shorn sheep. Two of these sheep are shown on the Royal Standard of Ur. This breed was represented in the prehistoric and Early Dynastic periods. It then became extinct and sheep were no longer used as milk animals.

3. Fat-tailed, wool-bearing sheep. The tail was heavy and long, extending down to the hocks. It was, to judge from the representations, 20 to 25 cm. long. The ears were small and erect. The rams were horned, as described for the breed numbered 2, above. Whether the females were horned is not known. This is the only breed that was known in Babylonian and Assyrian times.

The modern breeds with long fat tails and drooping ears appear to have come into Mesopotamia about the first millennium B.C. Three such breeds are recognized in Iraq. These, according to Williamson (1949: 49) and Mason (1951: 228), are:

Awasi (with the varietal name Neim). A heavy breed, with the head large and coarse. The fleece is usually white, the face black, but in some the fleece is black or brown. The male is heavily horned, the female usually hornless. The ears are large and semipendulous. These represent about 60 per cent of Iraq sheep.

Arabi. A small leggy breed in which the ram has a convex facial profile. The fleece is usually black, but about 30 per cent in Iraq are pied. The fleece comes over the face but stops short of the shanks. The males are strongly horned, the female hornless. The ears are pendulous and of medium size. This breed occurs in southern Iraq, southwestern Persia, and northeastern Arabia. It constitutes about 30 per cent of Iraq sheep.

Kurdi, or Kuradi. A coarse-wooled breed, usually hornless, although Charles A. Reed noted that flocks in the vicinity of Sulaimaniya usually contain one horned ram. The head and feet are usually black, and black wool may extend over the breast and front of shoulders. The face of the ewe is long and straight. Ears are pendulous and blunt. The true tail is very long and extends well beyond the fatty appendage. The breed is found in the hills of northwestern Iraq and constitutes about 10 per cent of Iraq sheep.

Today, sheep provide Iraq with its chief source of protein, animal fiber, felt, and hides. The census of 1947 reported more than 7,400,000 sheep in Iraq (Williamson, 1949: 78). The flocks, which are mixed with goats, are herded wherever vegetation will support them, from sea level up through the mountains.

## LAGOMORPHA

### *Lepus*

Hares; arneb (plural, araneb; Arab.); chivriskh (Kermanji Kurd. at Baradust), karwiskh (near Zakho), kerweshk (near Sulaimaniya) (Kurd.); chervish (Neo-Syriac); khargush ("ass ears," Pers.); tavshan (Turk.).

The hares of Iraq, which abound in the valley brushlands, the plains, and the unforested or open-forested mountains, are in need of a critical review based on far more specimens than are now available. *Lepus europaeus* and *L. arabicus* are reported, and Iraq is well within the range of *L. capensis* as given by Ellerman and Morrison-Scott (1951: 429).

### *Lepus europaeus connori* Robinson

#### European hare

*Lepus dayanus connori* Robinson, Rec. Ind. Mus. Calcutta, 15 (1918): 49. Type locality: Karun River between Ahwaz and Mohammerah, Iran.

**Specimens:** 5. Hilla, 2 females and a fetus; Mansuriya al Shatt, 2 males; Basra Liwa, male. A mounted specimen (INHM No. 34), collected at Baghdad by Taufiq Wahbi, is referred to this species. Also in that museum are a skin (No. 94) obtained by Nuri Mehdi at Baghdad, and a skin collected by Neal A. Weber, perhaps at Baghdad, on June 1, 1952.

**Measurements:** Two adult males taken at Mansuriya al Shatt measured head-body 505, 437 mm., tail 65, 63, foot 134, 124, ear 115, 108. A

pregnant female from Hilla measured 450 x 60 x 122 x 110. An adult male from Basra Liwa measured 495 x 45 x 125 x 112.

The specimens collected by Mehdi and Weber are strongly reddish, and may represent another form. Robert Angorly of Maqil, an experienced hunter, recognized two species of hare in the Basra region, one of which is "brown" and is reported to occur in the casuarina plantations. A specimen in Chicago Natural History Museum was collected by Charles A. Reed at 4,500 feet near Bola, but has not at this writing been identified.

Because no European specimens of *Lepus europaeus* were conveniently available for cranial measurements, I give here for comparison (Table IV) specimens in the United States National Museum reported in Miller's *Mammals of Western Europe* (1912: 510).

The common hare of Iraq, which I here refer to *L. e. connori*, has a skull much smaller and more delicately proportioned than typical *europaeus*. *L. arabicus*, as represented by skulls from Yemen, is an even smaller species.

Hares seemed common in some of the ruined cities where, like foxes, jackals, wolves, and hyenas, they find shelter in the crevices and rooms of old structures. At the so-called Summer Palace of Babylon and at the ziggurat of Borsippa I saw hares within moments of seeing foxes nearby. At Mansuriya al Shatt hares were flushed while we were hunting pig in the brushy floodlands bordering the Tigris. Although we saw none at Haditha on the Euphrates, they were reliably reported there. At Habbaniya, where there was no vegetation to hide a hare, we saw one leave an animal burrow

TABLE IV

Cranial Measurements (in mm.) of Six Specimens of *Lepus europaeus*

Measurement	USNM		CNHM			UMMZ	INHM
	105831 ♀	111558 ♂	44868	44476	44477	101189 ♂	90 ♀
	Switzerland	Switzerland	Baghdad	Baghdad	Baghdad	Mansuriya	Hilla
Occipitonasal length	101.6	99.2	84.0	?	87.5	86.4	89.0
Condyllobasal length	89.4	87.8	74.5	?	76.5	79.5	78.9
Interorbital width	20.0	18.6	13.0	14.5	13.0	14.4	14.8
Zygomatic breadth	47.8	46.8	38.7	39.5	41.2	44.5	?
Breadth of brain case	34.0	31.6	27.8	28.5	28.5	31.5	30.9
Maxillary tooth row	18.6	18.4	14.5	13.7	14.5	15.1	14.6
Length of nasals	45.0	45.4	35.9	?	38.0	35.4	39.1

on the high plateau. Hares were hunted in low, scattered vegetation along the lower reaches of the Tigris above Al Azair. The Iraqi commonly hunt hares with their seluki dogs. A hare collected at Hilla, December 15, contained a fetus near term.

Specimens of this hare were listed by Cheesman (1920: 342) from Hindiya, Kut al Imara, Shatt al Adhaim, Jalal, the frontier of Arabia, the plain north of Samarra, Al Falluja, Hit, Amara, Al Kumait on the Tigris, Shahraban, and Twin Canals. Pitman (1922: 477-78) reported others along the Tigris north of Ad Dawr. Other specimens, tentatively identified as *L. e. connori* by Sanborn (1940: 161), were reported from Baghdad and from Camp Rashid on its outskirts. Hubbard (1955: 190) reported on parasites found on hares from Baghdad and Hilla that he called "Lepus babylonicus," a *nomen nudum*.

*Lepus arabicus arabicus* Ehrenberg

Arabian hare

*Lepus arabicus* Ehrenberg, *Symb. Phys. Mamm.*, 2 (1833): signature r. *Type locality*: Qunfidha (19° N, 41° E), Arabia.

Ellerman and Morrison-Scott (1951: 434) reported the occurrence of this hare in Kuwait.

RODENTIA

Sciuridae

*Sciurus anomalus anomalus* Güldenstaedt

Persian squirrel; sinjab, jerd el jabal (Arab.); smorah, simoora, sincab (Kurd.); simoora (Neo-Syriac); dereek, kallag (Turk.).

*Sciurus anomalus* Güldenstaedt, *Schreber's Saigth.*, 4 (1785): 781. *Type locality*: Sabeka, 25 km. SW Kutais, Georgia, Caucasus.

*Specimens*: 9. Sarsank, 3 males, 3 females, 2 immature males, 1 immature female, November 18 to 23.

*Measurements*: Largest male and 2 others, head-body 207 mm. (194, 181), tail 126 (142, 145), foot ? (57, 55), ear ? (29, 30). Largest female and 1 other, 222 (202) x 148 (148) x 63 (59) x 30 (31).

The squirrel has only recently been recognized as a member of the fauna of Iraq, although Ainsworth (1838: 39-40) had noted that squirrels were abundant somewhere along his route in Iraq or Asia Minor, and Schmarda (1853: 408), probably on the basis of Ainsworth's report, included squirrels in his list of Mesopotamian mammals. Field (1955b: 60), from his observations during earlier explorations, listed squirrels as on Jabal Baradust, and in October, 1954, Harrison (1956a: 260) obtained specimens (identified as *Sciurus anomalus pallescens*) at Tinn near Bermaneh. He also noted that in the British Museum there are specimens taken in 1922 and 1925 from north of Erbil and from Mergashi by the

Cox-Cheesman expedition. Charles A. Reed secured a specimen (CNHM 84466) on Jabal Baradust, at 3,000 ft. elevation. Squirrels probably occur in all parts of the Zagros Mountains in which some vestige of forest remains. They were not uncommon in the open oak forest in the vicinity of Sarsank where we shot them in trees and on rock outcrops (see Pl. VI, Fig. 1). We also obtained them there from the boys who had stunned or killed them with sling shots. Woodcutters are said to find as many as a dozen squirrels in a single hollow tree. At least two species of oak in the region have large acorns and provide abundant food for the squirrels. Reed notes:

I believe that these squirrels live much more on the ground than any tree squirrels I have ever known. I described to a group of hunters in northern Erbil Liwa squirrels that lived almost entirely in trees, and the hunters were amazed and dubious as to my veracity. They thought of squirrels as but running for trees when in danger, and this I had also observed in Iraq.

I assign these squirrels to *S. a. anomalus* rather than to *S. a. pallescens* of nearby Iran because their tails have the deep color of the typical subspecies.

Castoridae

*Castor fiber* Linnaeus

Beaver; kunduz ("otter"; Arab.)

*Castor fiber* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 58. *Type locality*: Sweden.

In 1838 Ainsworth reported that the Euphrates expedition had found beaver where the route touched the Euphrates and the Khabur rivers (in modern Syria near the Iraq border). Apparently on the basis of this report, Schmarda (1853: 408) included the beaver in his list of Mesopotamian mammals. Ainsworth later reported (1888, 1: 337) that at Karkisha near the confluence of the Khabur and the Euphrates, "The Arabs brought us... the skin of a beaver for sale. They said that this animal, so valuable for its fur, was met with on the Khabur." The tails of the Khabur "beaver" were described by Layard (1859: 252) as short and pointed, not broad and large like those of American beaver. The Arabs, he wrote, killed four and brought in three young alive. The "beaver" were said not to build huts but to burrow in the banks. The musk sacs, prized by the Turks, made these animals much sought after. Layard's "beaver," then, may have been an otter, an animal which he must have known in Britain. Danford and Alston (1880: 60) heard reports that beaver with broad, hairless tails were found in the marshes of Asia Minor.

The beaver has, however, been established as having once been a member of the fauna of Iraq by Solecki's excavations in Shanidar Cave near Rawanduz, where the mandible of a beaver was found at a depth of 6 to 7 feet among Paleolithic deposits that have been dated by radioactive carbon as 12,000 + 400 years old. The cave, at about 2,200 feet elevation, is about a half mile from the Great Zab. This specimen, which was

brought to my attention by Charles A. Reed, was first identified by F. C. Fraser at the British Museum. In eastern central Anatolia, at the archeological site of Alishar Huyuk, a fragment of a beaver mandible has been found in remains of the Hittite period (Patterson, 1937: 296). The species may have continued to exist until the late nineteenth century in Anatolia and Syria if the reports of Danford and Alston (1880: 60) are to be credited. It may have disappeared from Iraq much earlier as the result of deforestation and the general pressure of human population.

### Hystricidae

#### *Hystrix indica* Kerr

Indian crested porcupine; daalej, nee iss, neer, hirr (Arab.); seekhor, jujuk, gjuskh (Kurd.); sikhurr (Neo-Syriac); djoodjeh-teeghi (Pers.); kirpi ("hedgehog," Turk.).

*Hystrix cristata* var. *indica* Kerr, *Anim. Kingd.*, 1792, p. 213. Based on Smellie's *Buffon*, 7 (1781): Pl. 206. *Type locality:* India.

*Specimens:* Quills were found in Wadi Haqlan (near Haditha) and in hyena dens at Ctesiphon and Mansuriya al Shatt.

A mounted specimen from Baquba, collected in 1946, is in the Iraq Natural History Museum. Specimens were also reported by Cheesman (1920: 342) from Beit al Khalifa and Samarra, and he noted that quills were found on the right bank of the Tigris between Samarra and Tekrit. Pitman (1922: 477) wrote that these porcupines were common in broken country on both sides of the Shatt al Adhaim and in ruins and old canal banks along the Tigris from the Adhaim to Ad Dawr. Ellerman's reference (1948: 766) to *Hystrix leucura* is to one of the same specimens listed by Cheesman as *Acanthion* sp. Field (1955b: 60) noted the presence of porcupine on Jabal Baradust — a much higher elevation than is elsewhere recorded. It probably occurs throughout Iraq except for the alpine zone, the marshes, and extreme deserts.

### Dipodidae

#### *Allactaga euphratica* Thomas

Five-toed jerboa; yarboua (classic Arab.), jarboua, sarathi (spoken Arab.); yarbou, jerboa (Kurd.).

*Allactaga euphratica* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 5, 8 (1881): 15. *Type locality:* Iraq.

Little is known of the five-toed jerboa in Iraq. Ellerman (1948: 773) reported skins from Baquba, Baghdad, and "40 mi. [64 km.] N. W. of Kuwait" in Arabia. Actually, a point so measured would fall within the borders of the independent shaikhdom of Kuwait. A specimen in the Iraq Natural History Museum, preserved in alcohol, is reported to be from Abureb.

*Jaculus jaculus loftusi* Blanford

Three-toed jerboa; jarboua (Arab.)

*Dipus loftusi* Blanford, *Ann. Mag. Nat. Hist.*, Ser. 4, 16 (1875): 312. *Type locality*: Mo-humrah (= Mohammerah, now Khur-ramshahr), southwestern Iran.

*Specimens*: 2. 59 km. W Basra, male, female, January 31.

*Measurements*: Male, head-body 115 mm., tail 180, foot 60, ear 25, weight 62 gm. Female, 104 x 162 x 56 x 20, weight 50 gm.

Although jerboas are common in Iraq, they were in hibernation during much of the season we were in the field and we secured only two, on January 31, in an area of fine, wind-blown sand in southern Iraq. A dead one was also seen on the road in this area. Jerboas were seen active at night on October 17 in a dusty desert near Baquba, and on January 23 in the Shamiya Desert, Basra Liwa. In the light from our car they hopped about erratically. Even by moonlight they could be easily seen, their light coats conspicuous against the desert. Jerboa dens were observed in a somewhat rocky desert immediately south of Haditha, but in early December these dens did not appear to be freshly used.

*Jaculus jaculus vocator* Thomas

Three-toed jerboa; jarboua, gaurti (Arab.)

*Jaculus loftusi vocator* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 9, 8 (1921): 441. *Type locality*: Sohar, Muscat, Arabia.

Present reports seem to indicate that these larger-skulled representatives of *Jaculus jaculus* occur chiefly to the eastward of the smaller-skulled *J. j. loftusi*, but many more specimens from Iraq will be required before this distribution can be plotted. Ellerman and Morrison-Scott (1951: 540) referred specimens from Kuwait and Az Zubair, in Iraq, to this race.

## Muscardinidae

Dormice have not been proven to be present in Iraq. Schmarda (1853: 408) included "Myoxus spc. plur." in his list of mammals of Mesopotamia, basing this listing, in all probability, on Ainsworth's unsubstantiated report (1838: 39) of the "great and common dormice" in the forested mountains. Metaxas (1891: 324) also reported a dormouse (loir) in Mesopotamia, but gave no details. Other collectors may find dormice, for the ranges of the following species come close to the borders of Iraq: the garden dormouse, *Eliomys melanurus* Wagner (from Sinai, Syria, Palestine, and northwestern Arabia); the forest dormouse, *Dryomys nitedula* Pallas (its range includes the Caucasus, Asia Minor, and Persia); and the fat dormouse, *Glis glis* Linnaeus (reported from Palestine, Asia Minor, southwestern Turkestan, and Persia).

## Spalacidae

*Spalax leucodon* Nordmann

(Pl. V)

Lesser mole-rat, blind-rat; quera, gor-halcana ("grave-digger," said to be used for badgers also), gor-khan (at Erbil) (Kurd.); kor sichan ("blind rat," Turk.); khilde (Neo-Syriac).

*Spalax typhlus leucodon* Nordmann, Demidoff Voy., 3 (1840): 34. *Type locality:* Near Odessa, U.S.S.R.

*Specimens:* 3. Sarsank, male, immature male, immature female, November 21 and 22.

*Measurements:* Adult male, total length 204 mm., foot 25. One young, 143 x 20; the other, 144 x 22.

"A mole-rat, *Aspalax typhlus*, abounds," Ainsworth wrote (1838: 39), "especially in the plains of Kurdistan." Schmarda (1853: 408) noted in turn that "*Siphneus* sp. indet." was found in Mesopotamia. The collectors in the British Expeditionary Force were not active in Kurdistan, and in Cheesman's only reference to mole-rats (1920: 325) he wrote that mounds of moles or rodents were seen near Mosul. The first identification based on a specimen seems to be that of Bate (1930a: 38) who reported bones of *Spalax* cf. *ehrenbergi* from the Hazar Mard caves near Sulaimaniya. Our specimens from Sarsank seem to be the first complete specimens. Harrison (1956a: 260) later obtained mole rats on Ser Amadiya and at Tinn near Bermaneh. These he assigned to *Spalax ehrenbergi* but noted that the mandibular character by which *leucodon* and *ehrenbergi* are partially defined is variable. Charles A. Reed obtained a specimen (CNHM 84465) at Jarmo.

The specimens are identified as *leucodon* rather than *ehrenbergi* on the basis of the prominent incisive knob of the mandible.

The burrows of the mole-rats in the vicinity of Sarsank occurred in all areas in which the soil would permit digging — in fields recently cultivated and in open oak and juniper slopes. The presence of mole-rats is immediately indicated by the mounds of loose earth thrown up from their burrows. These mounds, which closely resemble those of the pocket gophers of the New World, average about 12 inches across and 6 inches high. The roofs of the tunnels averaged, where we dug them, about 6 inches below the surface.

A living *Spalax*, turned loose on hard-packed ground, used its incisors rather than its weak forefeet to break the surface. The tail, which is not externally visible, can be felt within the loosely fitting skin. There is no opening in the skin for eyes, but small eyes are present below the skin. The living animal showed no reaction to strong light at night, but reacted quickly to sounds and to the stamping of a foot. The animal always *backed* away from a source of danger, which indicates the relative safety of its burrow. A wad of cotton thrown to it was seized and violently shaken and dragged as the animal retreated.

*Spalax ehrenbergi ehrenbergi* Nehring  
Palestine mole-rat

*Spalax ehrenbergi* Nehring, S. B. Ges. Nat. Fr. Berlin (for December, 1897), 178 (1898):  
Pl. 2. *Type locality*: Jaffa, Palestine.

Harrison (1956a: 260) identified mole-rats which he secured on Ser Amadiya and at Tinn as this species, but noted that the mandibular character by which *leucodon* and *ehrenbergi* are partially defined is variable. It is probable that further material will demonstrate that only one species is represented in Iraqi Kurdistan.

Muridae

Rats and mice (see also under *Mus*); jerd; jeraidy (plural, jeraidia, Arab.); jerj, kora mishk (Kurd.); kora mishk (Neo-Syriac); yaban sichan (Turk.).

*Apodemus mystacinus* Danford and Alston

Broad-toothed field mouse; dagh sichan ("mountain mouse," Turk.)

*Mus mystacinus* Danford and Alston, Proc. Zool. Soc. London 1877, 1877, p. 279. *Type locality*: Zebil, Bulgar Dagh, Asia Minor (Turkey).

*Specimens*: 2. Sarsank, male, female, November 22, June 25 (Hubbard).

*Measurements*: Female, head-body 165 mm., tail 130, foot 26, ear 18. This is slightly larger than *Apodemus flavicollis* of this area.

The specimen taken in November, 1952, (the first recorded for Iraq) was secured at the base of a rocky cliff (see Pl. VI, Fig. 1) at an altitude of about 4,000 feet, where oaks and other deciduous trees grew near the rock. In Turkey *mystacinus* was reported by Danford and Alston (1877: 280) as occurring on rocky hill slopes at an elevation of 3,000 to 4,000 feet. There is no record of the habitat of Hubbard's specimen. *Apodemus flavicollis*, which occupies adjacent slopes, was always taken where soil supported open forest or thickets and future collectors should try to determine whether this ecologic segregation from *A. mystacinus* is general.

Mammae were one pair thoracic, two pairs inguinal.

*Apodemus flavicollis argyropuli* Ellerman and Morrison-Scott

Yellow-necked field mouse

*Apodemus flavicollis argyropuli* Ellerman and Morrison-Scott, Checklist Palearctic Mamm., 1951, p. 568. New name for *Apodemus flavicollis parvus* Vinogradov and Argyropulo.

*Apodemus flavicollis parvus* Vinogradov and Argyropulo, Fauna U.S.S.R., N.S., 29 (1941): 163. *Type locality*: Delizhan, Armenia, U.S.S.R.

*Specimens:* 16. Haj Omran, 1, July 15 (Hubbard); Sarsank, 15, November 18 to 21; June 23 and 24 (Hubbard).

*Measurements:* Largest male and range of 3 (Sarsank), head-body 109 mm. (98-89), tail 100 (123-106), foot 23 (23-21), ear 21 (19-16). Largest female and range of 3 (Sarsank), 101 (100-92) x 115 (108-103) x 26 (24-23) x 17 (20-14).

These mice were caught in streamside and garden thickets, and in the drier open oak forests (see Pl. VI, Fig. 2), where they were near *Microtus*, *Meriones blackleri*, *Mus*, and *Crocidura*. Five embryos were found in a female taken November 18, but in no other.

The burrows of this species were found under the edges of rocks or tree roots, and a mound of excavated earth was always present just outside the dens. This apparently distinguishes their dens from those of *Microtus irani* which are common in the same habitat.

*Apodemus sylvaticus* Linnaeus

Field mouse

*Mus sylvaticus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 62. *Type locality:* Uppsala, Sweden.

Harrison reported (1956a: 259) this species from Ser Amadiya. This locality is so close to the one from which I have identified two other species that the geographic or ecologic separation among them will merit study.

*Rattus rattus* Linnaeus

House rat, black rat; jurth (classic Arab.), jeraidy (spoken Arab.); jerj (Kurd.).

*Mus rattus* Linnaeus, *Syst. Nat.*, ed. 10, 1 (1758): 61. *Type locality:* Sweden.

*Specimen:* 1. Baghdad, female.

Cheesman (1920: 339) listed specimens from Basra, Amara, and Baghdad.

*Rattus norvegicus* Berkenhout

Norway rat, brown rat; jurth (classic Arab.), jeraidy (spoken Arab.); kisk (Kurd.).

*Mus norvegicus* Berkenhout, *Outlines Nat. Hist. Great Britain and Ireland*, 1 (1769): 5. *Type locality:* Great Britain.

Cheesman (1920: 340) listed eight specimens from Basra and observed that no specimens were taken farther inland. A cage trap which I saw in a date grove of Basra contained two rats which appeared to be the brown rat rather than the black rat.

*Mus musculus praetextus* Brants

House mouse; faar (classic Arab.), far (spoken Arab.); mishk (Kurd.); akubra (Neo-Syriac); moosh (Pers.); fare, sikan (Turk.).

*Mus praetextus* Brants, *Gesl. der Muizen*, 1827, p. 125. *Type locality*: Syria.

*Specimens*: 22. 8 males, 10 females, 4 sex unrecorded. Lake Habbaniya, 2; Baghdad, 2; Sarsank, 5; K-3, 1; Hilla, 11; October 23 to December 18. Haj Omran, 1, July 15 (Hubbard).

*Measurements*: Field measurements of 11 adult specimens are given in Table V.

Specimens were reported by Cheesman (1920: 341) from Sinn Abtar and Twin Canals (both in the vicinity of Kut al Imara) and from Basra, Shaikh Saad, and Amara. Charles A. Reed secured specimens from localities in the region of Salahuddin and at Jarmo.

Our specimens from Lake Habbaniya were secured in a small garden near the shore; the Baghdad and K-3 specimens are from dwellings. Those from Sarsank were obtained in gardens and wild shrubby growth near the hotel. Specimens from Hilla were all trapped within the limits of the dead city of Babylon where they were common (18 were secured in 40 traps) in the tall, dry, thick grass of poorly tended date groves. The stomachs of all were well filled, in some instances with date pulp. Dates evidently constitute a chief food resource here. None of the females examined (December 15) contained embryos. No internal parasites were found.

TABLE V

Field Measurements (in mm.) of Eleven Adult Specimens of  
*Mus musculus praetextus*

Locality and Sex	Head-body	Tail	Foot	Ear
Hilla, 4♂, 3♀	83-72	86-70	20-18	16-13
Baghdad, ♀	75	71	18	9
Habbaniya, ♂	98	82	19	14
K-3, ♂	68	82	16	14
Sarsank, ♀	75	62	16	14

*Nesokia indica buxtoni* Thomas

Short-tailed bandicoot-rat; "bandicoot," "mole-rat"

*Nesokia buxtoni* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 26 (2) 1919: 422. *Type locality*: Amara, Iraq. Other specimens are recorded from Basra and Al Qurna.

*Specimens*: 16. Baghdad, 15; Mansuriya al Shatt, 1; February 2 to 9. All secured by C. A. Hubbard in the course of his parasitological investi-

gations. He reports the taking of others as follows: 26 km. W Baghdad, 4; Ar Ramadi, 1; Babylon, 6.

*Measurements:* Largest male, head-body 184 mm., tail 116, foot 39, ear 20, weight 170 gm. Three other adult males weighed 167, 159, and 123 gm. Largest adult female, 170 x 115 x 37 x 19, not weighed. Another female, 168 x 95 x 35 x 19, weight 130 gm. Four immature specimens weighed 75 to 50 gm.

Other records for the bandicoot-rat in Iraq are found in Cheesman (1920: 340) who recorded specimens from Amara, Al Qurna, Aqar Quf, Shaikh Saad, and An Nasiriya. Sanborn (1940: 161) recorded a skull from Baghdad. In Ellerman (1948: 808) the Cheesman localities were repeated and Maqil and Hinaidi were also given. Bones of the species were reported by Pocock (1934a: 410) from the excavations at Ur, where, it may be presumed, they were intrusive.

Pregnancies were reported by Hubbard in four specimens secured March 23; other females taken April 24 were said to be at full term.

All of these bandicoot-rats were obtained by using gopher traps in the underground runways. The earths of these rodents were common in cultivated areas near Baghdad and Basra.

*Cricetulus migratorius cinerascens* Wagner

Gray hamster

*Hypudaeus cinerascens* Wagner, *Arch. Naturg.*, 1 (1848): 184. *Type locality:* Syria.

This species was obtained by Harrison (1956a: 258) at Ser Amadiya, where he reported it abundant in August. Our trapping in nearby Sarsank in November produced no specimen. A specimen (CNHM 84463) was trapped by Charles A. Reed at Jarmo on March 28. This specimen, a female, measured head-body 93.5 mm., tail 22.5, foot 14.5, ear 13.5.

*Gerbillus dasyurus dasyurus* Wagner

Naked-soled gerbil, Wagner's gerbil

*Meriones dasyurus* Wagner, *Arch. Naturg.*, 1 (1842): 20. *Type locality:* Sinai.

Harrison (1956c: 420) reported one specimen in his own collection, secured near H-2 in the Syrian Desert, east of Rutba.

*Gerbillus dasyurus mesopotamiae* Harrison

Naked-soled gerbil, Harrison's gerbil

*Gerbillus (Dipodillus) dasyurus mesopotamiae* Harrison, *Journ. Mammalogy*, 37 (1956): 417. *Type locality:* Amiriya, west bank of the Euphrates, SW Al Falluja, Iraq.

To this newly named subspecies, Harrison referred specimens from Baghdad and Amara, possibly from the series listed by Cheesman (1920:

338) as *Gerbillus dasyurus* which was secured at these same localities. To these records may be added the following from my collections.

*Specimens*: 17. Basra, 2, January 30; Baghdad, 3, December 4, February 11; Lake Habbaniya, 3, October 23; K-3, 9, December 4 and 6. Two of the Baghdad specimens were secured by Hubbard.

*Measurements*: Measurements of 10 specimens are given in Table VI. An adult male from Baghdad weighed 33 gm.; a female subadult, 29 gm.

TABLE VI

Measurements (in mm.) of Ten Specimens of *Gerbillus dasyurus mesopotamiae*

Locality and Sex	Head-body	Tail	Foot	Ear
Basra, ♂	97	123	29	14
Baghdad, ♂	90	110	26	16
Habbaniya, ♂	86	110	26	14
K-3, ♂ ♂	98, 90	112, 118	25, 25	14, 15
Basra, ♀	86	106	25	13
Baghdad, ♀ (subadult)	86	97	23	13
Habbaniya, ♀ ♀	80, 86	121, 109	25, 24	14, 14
K-3, ♀	83	112	22	12

The gerbils secured on January 30 near Basra were found among casuarinas planted in wind-blown sand. Those taken in late October at Lake Habbaniya were in the sparse vegetation bordering the lake. The nine specimens secured at K-3 were trapped among the broken rocks and rock ledges of Wadi Haqlan. Five were trapped one night in five traps spaced along a line of about 30 feet. Their concentration was surprising in view of the almost complete lack of visible food.

A female, secured at Lake Habbaniya on October 23, contained four embryos measuring 14 mm. from crown to rump. A female taken near Baghdad on February 11 contained four embryos of 3 mm. crown-to-rump length. Mammae on two females were one pair thoracic, two pairs inguinal. An adult male secured in October had the testes abdominal.

*Gerbillus cheesmani cheesmani* Thomas  
Cheesman's gerbil

*Gerbillus cheesmani* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 26 (1919): 748. *Type locality*: Near Basra, lower Euphrates, Iraq. Thomas gave the locality only as Mesopotamia; Cheesman (1920: 338) reported that the specimen had been taken along the Basra-An Nasiriya railway, lower Euphrates.

*Specimens*: 3. Lake Habbaniya, October 24.

*Measurements*: Two adult males, head-body 96, 91 mm.; tail 126, 116; foot 30, 26; ear 15, 15.

Specimens other than the Type have been recorded by Ellerman (1948: 802) from sea level at Qariya, Kuwait; by Vesey-Fitzgerald (1953: 424) from Kuwait; and by Harrison (1956c: 420) from along the west bank of the Euphrates southwest of Al Falluja near Haur al Hasa and Amiriya. My own records lie within this range.

These mice were taken in the same sparse lakeside vegetation in which we had trapped specimens of *Gerbillus dasyurus mesopotamiae* the evening before.

*Tatera indica taeniura* Wagner

Indian gerbil, antelope rat

*Meriones taeniurus* Wagner, *Schreber's Saigth.*, 1843, Suppl. 3, p. 471. *Type locality:* Syria.

*Tatera pitmani* Cheesman, *Journ. Bombay Nat. Hist. Soc.*, 27 (1920): 337. *Type locality:* Baiji, near Fatah Gorge, Tigris, Iraq. The "habitat" is given as the rocky soils and foothills of the Jabal Hamrin range on the northwest boundary of the Iraq plain.

This gerbil has been variously reported from Iraq under the names of *Tatera pitmani*, *T. bailwardi*, *T. indica*, and *T. indica taeniura* by many authors. Kinnear (1916: 7) reported it from several localities in Persian Mesopotamia, and mentioned its being taken by the Euphrates expedition. Cheesman (1920: 337) listed specimens from Amara, Sinn Abtar, Kut al Imara, Baghdad, Aqar Quf, Shaikh Saad, and Shahraban. He also described (*loc. cit.*) as new, *T. pitmani* from Baiji near Fatah Gorge, a name which Ellerman and Morrison-Scott (1951: 637) considered synonymous with *T. indica taeniura*. Pitman (1922: 476) reported the species common at Aqar Quf; Ellerman (1948: 799) listed specimens from Kuwait, Amara, Aqar Quf, and Kasimani (Baghdad). Vesey-Fitzgerald (1953: 424) secured a specimen just south of the town of Kuwait, and Harrison (1956c: 422) found the species at Habbaniya.

*Meriones persicus* Blanford

Persian jird; adhal (Arab.)

*Gerbillus persicus* Blanford, *Ann. Mag. Nat. Hist.*, Ser. 4, 16 (1875): 312. *Type locality:* Kohrud, 195 km. N Isfahan, Iran.

*Specimens:* 3. Salahuddin, 1, July 10 (Hubbard); Shaqlawa, 2, July 14 and 15 (Hubbard).

Specimens from Kani Mase in the Hakari Mountains and from 6,000 feet on Ser Amadiya were reported by Harrison (1956a: 257). Charles A. Reed secured a specimen (CNHM 84464) at Jarmo.

*Meriones blackleri blackleri* Thomas

Turkish jird

*Meriones blackleri* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 7, 12 (1903): 189. *Type locality:* Smyrna, western Asia Minor (Turkey).

*Specimens:* 4. Sulaimaniya, 3, November 4; Sarsank, 1, November 20.

*Measurements:* Adult male (Sarsank), head-body 110 mm., tail 119, foot 36, ear 18. Largest adult female and 2 others, 139 (121, 131) x 145 (130, 120) x 35 (34, 32) x 20 (19, ?).

The specimen from Sarsank was secured in oak scrub on a hillside (see Pl. VI, Fig. 2). The specimens from Sulaimaniya were taken in a lightly vegetated drainage channel in an area of cultivated fields on the Bakrajo Experimental Farm, the only catches in a long line of traps. Members of the Farm staff said small rodents were abundant in the warmer season. The results of our trapping indicate that other species were inactive in early November.

Mammae on three specimens were two pairs thoracic, two pairs inguinal. No embryos or young were found.

This gerbil was listed for Dohuk, Iraq, by Ellerman (1948: 794-95). The specimens from Dohuk in the British Museum are, however, labeled *Meriones blackleri lycaon*.

*Meriones libycus syrius* Thomas

Libyan jird

*Meriones syrius* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 9, 3 (1919): 268. *Type locality:* Karyatein, Syrian Desert.

*Specimen:* 1. At Tuba, Basra Liwa, January 29.

*Measurements:* Adult female, head-body 150 mm., tail 157, foot 39, ear 21.

Our specimen was stunned when it walked into a small snap trap three minutes after the trap had been set. This was at one of many burrows under a large, isolated, thorny bush in a sandy desert west of Basra.

This species was reported earlier from Az Zubair by Ellerman (1948: 796) and from Amiriya and Al Jazira southwest of Samarra by Harrison (1956c: 421).

*Meriones crassus crassus* Sundevall

Jird

*Meriones crassus* Sundevall, *K. Sv. Vetensk. Akad. Handl.*, 1842, p. 233. *Type locality:* Fons Moses (Ain Musa), Sinai.

*Specimens:* 2. 150 km. NW Basra, female, January 27; Haditha, male, December 5.

*Measurements:* Female, head-body 114 mm., tail 142, foot 31, ear 19. Male, 117 x 92 x 35 x 18.

The specimen from Basra was secured at its den in the side of a small sandy mound in the open desert where almost no vegetation existed at that time. The specimen secured near Haditha (K-3) was taken in the shelter of a rock outcrop in the open desert, where we also found a hedgehog, caught the sand fox, and observed a red fox.

C. A. Hubbard told me that he took three males and four pregnant females 24 km. west of Ar Ramadi on April 8. A male was also reported by Hubbard 32 km. west of Baghdad on the Al Falluja road.

A specimen from "Kuwait district, Arabia" was mentioned by Ellerman (1948: 797), and Vesey-Fitzgerald (1953: 427) also reported the collection of this species in Kuwait on March 3.

*Meriones crassus charon* Thomas

Karun desert gerbil, Sundevall's jird

*Meriones charon* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 9, 3 (1919): 269. *Type locality:* Mound of Susa, Ahwaz, Iran.

This gerbil was recorded from Baghdad and from Beled on the Tigris by Cheesman (1920: 339); from Kasimani (Baghdad) and Az Zubair by Elerman (1948: 798); and from Haur al Hasa in the vicinity of Samarra and Al Jazira about 32 km. southwest of Samarra by Harrison (1956c: 421).

*Ellobius lutescens* Thomas

Mole-vole

*Ellobius lutescens* Thomas, *Ann. Mag. Nat. Hist.*, Ser. 6, 20 (1897): 308. *Type locality:* Van, Kurdistan, eastern Asia Minor (Turkey).

Among the specimens reported by Bate (1930a: 39) from the caves of Hazar Mard is an *Ellobius* whose bones were found in deposits now regarded as 25,000 years old. The identification was made by Hinton. The species was reported (Charles A. Reed, *in litt.*) deep in Shanidar Cave — 26 to 36 feet below the surface — in deposits which are older than the present 34,000-year limit of radiocarbon technique. The genus is known in modern times from eastern Turkey and western Iran. It may yet be found as a living species in the mountains of Iraq. I do not know whether the condition of the bones found in Shanidar Cave rules out the possibility that *Ellobius* entered these ancient deposits recently in the course of burrowing.

*Microtus socialis* Pallas

Social vole

*Mus socialis* Pallas, *Reise Russ. Reichs*, 2 (1773): 705. *Type locality:* "Grassy regions of desert by Ural River," U.S.S.R.

A single specimen, from Ser Amadiya, was reported by Harrison (1956a: 260).

*Microtus irani* Thomas

Persian vole

*Microtus irani* Thomas, *Journ. Bombay Nat. Hist. Soc.*, 27 (1921): 41. *Type locality:* Bagh-i-Rezi, Shiraz, Iran.

*Specimens:* 13. Sulaimaniya, 1, November 4; Sarsank, 3, June 24 (Hubbard), and 9, November 18 to 22.

*Measurements:* Largest male (Sarsank) and range of 3, head-body 119 mm. (109-104), tail 31 (32-21), foot 20 (20-19), ear 12 (14-12). Largest female (Sulaimaniya) and 2 others (Sarsank), 113 (104, 101) x 27 (28 x 34) x 21 (19, 20) x 12 (11, 11).

Ellerman (1948: 787) noted specimens of the species from "Baghdad," but wisely questioned whether they really came from that locality.

No embryos were found in any of the five females which our party obtained. Most of the specimens taken at Sarsank were secured in thick herbaceous growth bordering a garden. Some were caught in a thicket along a mountain stream, and others in an open oak stand on a dry hillside. The thickets were shared by *Apodemus flavicollis*, *Mus musculus*, and *Crocidura leucodon*. The dry hillside was shared with *Meriones blackleri*, *Mus musculus*, and, probably, *Apodemus mystacinus*. The specimen from Sulaimaniya was secured in a heavily grazed but uncultivated wash on the Bakrajo Experimental Farm, where the terrain was also occupied by *Meriones blackleri*.

The only well-marked runways seen were in the thick grass near the mountain stream. Two specimens of *Microtus irani* were trapped at their burrows in the oak forest, where the ground offered only scattered cover (see Pl. VI, Fig. 2). As many as seven burrow openings were found within a ten-foot radius.

## CETACEA

## Balaenopteridae

*Megaptera novaeangliae* Borowski

Humpback whale

*Balaena novae angiae* Borowski, *Gemeinn. Naturgesch. des Thierreichs Berlin*, 2, 1 (1781): 21. *Type locality:* New England coast.

*Megaptera indica* Gervais, *C. R. Acad. Sci. [Paris]*, 97 (1883): 1566. *Type locality:* Bay of Basra, Persian Gulf.

The Type of Gervais' *Megaptera indica* may be considered an Iraq record. The humpback was also reported in the waters of the Persian Gulf by Cheesman (1926: 347), who noted that these animals annually visit the Gulf coast of Arabia. A vertebra and a rib of a whale that are said to have been found about 1954 during construction of a well near Fao are now in the Iraq Natural History Museum (Bashir Allouse, *in litt.*). There is an old report that a Turkish gunboat killed this whale about a century ago in the Shatt al Arab, the bones subsequently being carried to the village.

## Delphinidae

Porpoises were reported by Ainsworth (1888, 2: 234) in the Bamishir River near Mohammerah, but, he noted, "I have not seen any in the Euphrates — probably they were disturbed by navigation." Kinnear (1916: 8) wrote, however, that dolphins and porpoises were reported in the Shatt al Arab, and Cheesman (1926: 347) stated that porpoises ranged the length of the Persian Gulf. Identification must, of course, await the collection of specimens.

## LIST OF COLLECTING STATIONS

During most of the period that I was in Iraq (October 14, 1952, to March 13, 1953) I was in Baghdad. Collecting was, however, conducted away from the capital city at the following places and times: Lake Habaniya, October 22 to 25; Sulaimaniya, November 2 to 6; Sarsank, November 16 to 24; Haditha and K-3, December 2 to 6; Hilla and Babylon, December 14 to 17 and January 23 and 24; Basra Liwa, January 25 to February 4. Minor hunting or collecting was carried on in Baghdad and at such nearby localities as Mansuriya al Shatt.

Trips to Fao on the Gulf, to Jabal Sanam near the Kuwait border, to Rutba and beyond to Jordan's frontier, to the Syrian border on the Damascus track, and to Amadiya near the Turkish border broadened my view of the country, though they did not reward us with mammal specimens. In Basra and Sulaimaniya liwas some collecting was done within sight of the Iranian frontier. In a superficial way, at least, we saw Iraq in all its extent. Most transportation was by automobile, but away from the hills this does not confine one to the roadways, for in large sections of Iraq one can drive at will over the trackless desert. Only the danger of breakdown and isolation prevented more widespread travel.

The principal collecting localities (see Map 1, p. 25) may be briefly characterized as follows:

*Baghdad.*  $33^{\circ} 21' N$ ,  $44^{\circ} 25' E$ . On the Tigris above its confluence with the Diyala. Alt. about 110 ft. Annual rainfall 5.5 in. Population of province in 1957 was 1,306,604. The national capital.

*Basra.*  $30^{\circ} 30' N$ ,  $47^{\circ} 47' E$ . Alt. about 7 ft. Annual rainfall 8.7 in. Population in 1957 was 502,884. It is connected by rail, air, river, and roads (seasonally impassable) to Baghdad and communicates with the outside world through its port and airfield at Maqil. Basra is the center of date growing and the orchards extend as much as 5 km. from the river (Shatt al Arab). The city and cultivated area is surrounded by desert, by salt flats, and by the marshes of Hor al Hammar.

From Maqil as a base we ranged widely over the deserts from the Kuwait frontier to the Iranian border. Trap lines were established in large desert plantations of casuarinas (32 km. west of Basra), in a date orchard along the Shatt al Arab, in sandy areas and stony areas with scattered desert scrub (39 to 59 km. west of Basra), and along empty irrigation ditches and in abandoned fields across the river from Maqil. We hunted

along the Tigris above Al Azair, over the then dry lake bottom of Hor al Hammar to the marginal fishing village of Medaiche, over the rocky slopes of Jabal Sanam, and along the salt flats to Fao, but secured only a few specimens.

*Haditha.*  $34^{\circ} 07' N$ ,  $42^{\circ} 23' E$ . Alt. on plains about 400 ft. Annual rainfall 5.6 in. Population in 1947 was 14,223. Haditha is reached, in favorable weather, by road from Baghdad, or by private plane. The present village, which is about 5 km. south of the older settlement on Haditha Island in the Euphrates, is closely associated with K-3, an important pumping station of the Iraq Petroleum Company's pipeline from Kirkuk to Syrian Tripoli. About 1,000 persons are employed here. The river at this point flows between high escarpments approximately 1 km. apart, the river and its islands occupying about half this distance. The narrow strips of land which can be irrigated are occupied by date palms or other cultivated plants. The desert plateau presses close to the river and, in the area where we collected, it was about 200 ft. above the river. The land around K-3 is a generally level limestone tableland with moderate karst development. The plain is broken by a few small rocky hills, sinkholes, and wadis. Away from the river there are a few scattered annuals and thorny shrubs but no trees. In the compound of the Iraq Petroleum Company trees and flowers thrive under irrigation.

Trap lines were set in Wadi Haqlan, along two rock outcrops, in two shallow sinkholes, and on the open desert. No collecting was done in the area of cultivation.

Wadi Haqlan is the main canyon near K-3 and empties into the Euphrates. The canyon walls, vertical in most places and as high as 100 ft., are formed of a layer of crystalline limestone containing fossil corals, overlaid by a firmly cemented limestone conglomerate, which is in turn protected by a more resistant, horizontally bedded limestone cap rock. Erosion of the conglomerate produces many animal shelters. The rocky to sandy wadi floor, which was completely dry at the time of our visit in early December, supports only a few scattered plants.

*Hilla.*  $32^{\circ} 29' N$ ,  $44^{\circ} 25' E$ . Alt. about 90 ft. Annual rainfall 3.9 in. Population of city in 1947 was 51,361; of province, about 250,000. The city is situated on the Hilla Canal, a main channel of the Euphrates controlled by the Hindiya Barrage, and is connected by paved road and railway with Baghdad, 90 km. to the north. The ruins of Babylon are 6 km. north; Borsippa a little farther to the southwest. Extensive date orchards fringe the river and farming is conducted where the land can be irrigated. Areas subject to seasonal inundation are occupied by brush and some tree growth. Our trapping and hunting was done in these riverside brushlands, in neglected date orchards, in abandoned fields, and in the ruins of Babylon and Borsippa.

*Lake Habbaniya.*  $33^{\circ} 17' N$ ,  $43^{\circ} 29' E$ . Alt. about 140 ft. Annual rainfall 5.8 in. This roughly circular lake, 19 km. in diameter, was slightly saline until 1942 when a cut was made to feed the Euphrates at low water. It is reached by a short lateral road from the Al Falluja-Ramadi road. The desert extends to the waterline, and there is no marginal vegetation. On the northwestern shore, where we were quartered in the Royal Air

Force resthouse, bluffs of gypsum about 100 ft. high occur a short distance from the water. Numerous wadis dissect these bluffs, and constitute highways for the animals moving from the plateau to the lake basin.

Tracks of carnivores were abundant in the lower wadis. Traps were set in a foot-high patch of dwarf acacia, camel thorn, and sedge near the shore, an area seasonally inundated. Other trap lines were set in the level barren desert, in the wadis, and in dry fields near the town of Habbaniya which, in late October, were fallow.

*Mansuriya al Shatt* ("Mansuriya of the river"). A farm near the village of Al Mansuriya. It is on the left bank of the Tigris, 45 km. northeast of Baghdad. Collecting here was by shooting alone, chiefly in the thick brush bordering the river, but also in ill-kept irrigated date orchards near the neighboring village.

*Sarsank*. Approximately  $37^{\circ} 03' N$ ,  $43^{\circ} 15' E$ . Annual rainfall about 50 in. This small Christian village lies along the Mosul-Amadiya road, at an elevation of about 3,760 ft. It is the site of one of the State summer hotels, and a former summer palace of the late regent, Emir Abdul Ilah. The valley floor is about 500 ft. below the hotel and the hills rise to an elevation of 6,000 ft. At intervals of 2 to 3 km. small mountain streams descend the slopes to the Av-i-Sarka, the tributary to the Khabur Su occupying the valley bottom. These small, swift-moving streams are often bordered by dense growths of poplars, brambles, and herbaceous growth. Crabs are abundant in the streams and both frogs and turtles were secured there. The middle slopes of the hills are partially cultivated or retain an open growth oak-juniper association. In late November the weather was cold with ice forming at night.

Our hunting and trapping covered an altitudinal range of about 1,000 ft.

*Sulaimaniya*.  $35^{\circ} 33' N$ ,  $45^{\circ} 26' E$ . Alt. about 2,750 ft. Annual rainfall 32.7 in. Population about 45,000. This small Kurdish city lies on the lower slopes of the Azmar Dagh and is the center of a rich agricultural district in the Av-i-Tanjero valley. Mountains rise boldly around the city; Pir-i-Mukurum, 30 km. to the northwest, is almost 8,600 ft. high. The surrounding hills have long been divested of their forests, only specimen trees surviving at holy places. Nearby is the still treeless Goaja Forest Demonstration area, the Bakrajo Experimental Farm, and Qalasam Plantation, a small, dense, irrigated stand of poplars used as a demonstration wood lot.

Trapping was conducted at each of these sites, but, owing to the season of the year (early November), almost no small mammals were above ground. The Hazar Mard caves (see Bate, 1930a), about 12 km. to the southwest, were visited and, though a few bats were heard, no mammals were obtained at the caves.

## GLOSSARY AND GAZETTEER

This gazetteer lists all of the place names in Iraq and bordering countries that are noted in this report, except for some sites adequately localized in the text. Certain names are listed but not identified, chiefly nineteenth-century stations on the Tigris River mentioned by Swaboda in his journals (see section on lions in text). Authors' names in this list are enclosed in brackets.

The transliteration used here follows, in most instances, the form used in the British 1932 list, and the text standard is given first position. This standard occasionally ignores the principle that Iraqi Arabic has no *e* or *o* and Persian no *i* or *u* (though *ī* and *ū*). The Turkish soft *i* (undotted) is given herein as *i*. In the main entries the spelling recommended by the United States Board on Geographic Names in 1957 is identified by an asterisk (\*). Alternate spellings found in the literature on mammals and on official maps are also given. Certain awkward transcriptions which have appeared in zoological literature have been placed within quotation marks. Diacritical marks are omitted from all spellings because of the difficulty of reproducing them in typescript and because zoologists generally are unfamiliar with their meaning.

The geographic co-ordinates are, in general, those given by the United States Board on Geographical Names. Underscoring of a place name indicates that the site is shown on the map accompanying this report.

Additional localities and further data on transliterations of Iraq place names may be found in the following publications:

- 1932 First List of Names in Iraq (Mesopotamia). Permanent Committee on Geographical Names for British Official Use. London: Royal Geographical Society. 12 pp.
- 1939 List of Tribal Names Appearing on Maps of Iraq (A). Chicago: Field Museum of Natural History. 5 pp.
- 1944 Iraq and the Persian Gulf. K. Mason *et al.* (see Literature cited). Pp. xviii + 682.
- 1946 The Transliteration of Arabic and Persian. Spec. Publ. No. 78, U. S. Board on Geographic Names. Washington. 9 pp.
- 1957 Iraq. Gazetteer No. 37, U. S. Board on Geographic Names. Washington. 175 pp.

## Glossary

Except as specified, most terms are Arabic.

ab (Pers.): stream  
 ad, adh, al, an, ar, as, ash, at, ath, az: the  
 ain, ayn: spring  
 atlal: ruin  
 av (Kurd.): stream  
 balad: town  
 beit, bait: house of  
 bir: well  
 chai, chay (Turk.): stream  
 cham (Kurd.): stream  
 chia (Kurd.): mountain  
 dag (Turk.): mountain  
 dagh (Pers.): mountain  
 ghor, ghawr: valley  
 hor, haur, hawr: large marsh or lake, depression  
 jabal, jebal, jebel: mountain  
 kadha (see qada)  
 kalah, khalat, kaled (see qalat)  
 kani (Turk.): spring  
 khan (Pers.): inn, caravansary  
 kuh (Pers.): mountain  
 kut (Pers.): fort, town

liwa: province, administrative district.  
 The 14 liwas as here anglicized are:  
 Amara, Baghdad, Basra, Diwaniya,  
 Diyala, Dulaym, Erbil (Arbil), Hilla,  
 Karbala, Kirkuk, Kut al Imara, Mosul,  
 Muntafiq, Sulaimaniya.  
 maidan: plain, plateau  
 milleh: people, tribe, nation, religious community  
 naher: canal, stream  
 qada (plural, aqdiyah), kadha: subprovince  
 qalat, qala, qaleh, kalat, khalat, kaled:  
 castle, fort  
 qura: kiln  
 qurna: island  
 rud (Pers.): river  
 ser: peak  
 shatt: large river, river bank  
 su (Turk.): river  
 suq: market, bazaar  
 tell, tall, tel: hill  
 tepe (Turk.): hill  
 wadi: watercourse

## Gazetteer

Abureb: Experimental farm. Baghdad.

Abusakhair: Village, on Tigris, about 56 km. SE Amara [Hayman]. Not \*Abu Sakhr, northern edge of Hor al Hammar.

Adhaim, Shatt al; \*Nahr al Uzaym: Tributary to Tigris, 75 km. N Baghdad.  $34^{\circ} 01' N$ ,  $44^{\circ} 19' E$ .

Ahwaz (Iran); \*Ahvaz: City.  $31^{\circ} 19' N$ ,  $48^{\circ} 42' E$ .

Ali Sharqi; \*Ali Ash Sharqi; Imam Ali Shergi: Village, on E bank of Tigris above Al Kumait.  $32^{\circ} 07' N$ ,  $46^{\circ} 44' E$ .

Almawan: Settlement, on Erbil-Shaqlawa road.  $36^{\circ} 25' N$ ,  $44^{\circ} 13' E$ .

Alqosh (see Qosh, Al).

Amadiya; \*Al Amadiyah: Town, 90 km. N Mosul.  $37^{\circ} 06' N$ ,  $43^{\circ} 29' E$ .

Amadiya, Ser: Mountain, N Amadiya. Alt. over 6,100 ft.

Amara; \*Al Amarah: Town, 160 km. NW Basra.  $31^{\circ} 50' N$ ,  $47^{\circ} 09' E$ .

Amiriya: "Settlement, on W bank of Euphrates, SW Falluja" [Harrison].  $33^{\circ} 40' N$ ,  $44^{\circ} 32' E$ . Not \*Al Amiriyah.

Ana; \*Anah: Town, on Euphrates, 125 km. NW Hit.  $34^{\circ} 28' N$ ,  $41^{\circ} 56' E$ .

Ancoma (= Al Qurna?).

Aqar Quf; Aqarguf; Agar Kuf; \*Burj Aqarquf, Kuf, "Lake Akaar": Depression, marsh, or lake, 15 km. NW Baghdad. Also ruins (Dur-Kurigalzu).  $33^{\circ} 22' N$ ,  $44^{\circ} 12' E$ .

Aqr, \*Imam al: Tomb, 14 km. SE Kut al Hai.  $32^{\circ} 04' N$ ,  $46^{\circ} 05' E$ .

Aqra; \*Aqrah: Town, 80 km. NE Mosul.  $36^{\circ} 45' N$ ,  $43^{\circ} 54' E$ .

Arab, \*Shatt al: River, from confluence of Tigris and Euphrates to Persian Gulf at Fao.  $31^{\circ} 00' N$ ,  $47^{\circ} 29' E$ .

Arbil; Arbela (see Erbil).

Attal Babil (see Babylon).

Av-i-Sarka: Tributary to Khabur Su (see List of Collecting Stations, Sarsank).

Azair, Al; \*Al Uzayr; Ezra's Tomb: Village, 35 km. N Al Qurna.  $31^{\circ} 19' N$ ,  $47^{\circ} 25' E$ .

\*Babylon; \*Attal Babil: Ruins.  $32^{\circ} 32' N$ ,  $44^{\circ} 25' E$  (see List of Collecting Stations, Hilla).

Badra; \*Badrah: Village, near Iranian frontier, 70 km. N Kut al Imara.  $33^{\circ} 06' N$ ,  $45^{\circ} 58' E$ .

Badri; Al Badi: Village, S Sinjar. Approximately  $35^{\circ} 55' N$ ,  $41^{\circ} 40' E$ .

\*Baghdad; Bagdad: City.  $33^{\circ} 21' N$ ,  $44^{\circ} 25' E$  (see List of Collecting Stations).

Baghdad, Eski; \*Baghdad al Qadimah; "Old Baghdad": Ruins, on Tigris, 15 km. N Samarra.  $34^{\circ} 19' N$ ,  $43^{\circ} 50' E$ .

Baghdadiyah, Fort; \*Khan al Baghdadi: Settlement, on Euphrates, 30 km. NW Hit.  $33^{\circ} 51' N$ ,  $42^{\circ} 33' E$  (see also next entry).

Baghdadiyah; \*Al Baghdadiyah: Settlement, on Tigris, near Suwaira, 60 km. SE Baghdad.  $32^{\circ} 58' N$ ,  $44^{\circ} 52' E$ .

Bahrka (= Al Baka?): Ruin on W bank of Euphrates, 25 km. below Racca [Wettstein, 1913].

\*Baiji: Village, on Tigris below Fatah Gorge, 40 km. NW Tekrit.  $34^{\circ} 56' N$ ,  $43^{\circ} 29' E$ .

Bakrajo; \*Bakrajah: Settlement and experimental station, near Sulaimaniya.  $35^{\circ} 33' N$ ,  $45^{\circ} 21' E$ .

Baksai; \*Baksayah; Bagsaya; Bagh-i-Shahi: District and deserted village, 70 km. NE Kut al Imara; on Chankuia Galal, Iranian frontier.  $32^{\circ} 53' N$ ,  $46^{\circ} 26' E$ .

\*Balad Ruz: Village, 75 km. NE Baghdad.  $33^{\circ} 42' N$ ,  $45^{\circ} 05' E$ .

Balad Sinjar (see Sinjar).

Balis; Old Meskene: Medieval city on Euphrates, 90 km. E Aleppo.

Bamishir: River, E side of Abadan Is., parallel to Shatt al Arab, from mouth of Karun to Persian Gulf.

Banaman: Village, on Erbil-Shaqlawa road. Approximately  $36^{\circ} 23' N$ ,  $44^{\circ} 08' E$ .

Baquba; Bakuba; \*Baqubah: Town, 50 km. NE Baghdad.  $33^{\circ} 45' N$ ,  $44^{\circ} 38' E$ .

\*Baradust, Jabal; Jebel Baradost; Dagh Baradost; Chia-i-Nivakhin: Limestone ridge extending from near Rawanduz to the Rukuchuck.  $36^{\circ} 46' N$ ,  $44^{\circ} 21' E$ . Length about 40 km., highest point 6,809 ft.

Baranand Dagh: Mountain  $35^{\circ} 15' N$ ,  $45^{\circ} 35' E$ .

Barda Balka: Paleolithic site, 3 km. NE Chamchamal, Kirkuk Liwa.

\*Barzan: Village.  $36^{\circ} 55'$  N,  $44^{\circ} 03'$  E.

Basra; \*Al Basrah; Busrah; Bassorah: City.  $30^{\circ} 30'$  N,  $47^{\circ} 47'$  E (see List of Collecting Stations).

\*Batas: Village.  $36^{\circ} 35'$  N,  $44^{\circ} 21'$  E.

Bebaidi; Bedadi; \*Bibadi: Village, 3 km. W Amadiya.  $37^{\circ} 07'$  N,  $43^{\circ} 27'$  E.

Beit (see proper name).

Bekme; Behkme: Gorge and dam site, on Great Zab, in Berat Dagh. Approximately  $36^{\circ} 40'$  N,  $44^{\circ} 15'$  E.

Beled; \*Balad: Village, on Tigris, between Samarra and Shatt al Adhaim.  $34^{\circ} 01'$  N,  $44^{\circ} 09'$  E.

Berat Dagh: Mountain, between Aqra and Rawanduz.  $36^{\circ} 45'$  N,  $44^{\circ} 10'$  E.

Berman Dagh: Mountain, in Chiya-kira Dagh range. Alt. 5,485 ft.

Bermaneh; Bamari: Village, 19 km. W Amadiya. Approximately  $37^{\circ} 08'$  N,  $43^{\circ} 17'$  W.

Berwari; Berwane: Village. In 1912, a village on right bank of Euphrates, about 2 km. below Haditha.

Bir; Al Bir: Village, on right bank of Euphrates, near Racca.

Bola; \*Bolah: Village, in extreme NW Erbil Liwa.  $36^{\circ} 45'$  N,  $44^{\circ} 42'$  E.

Borsippa; Birs Nimrud; Namrud: Ruin, SW Hilla (see List of Collecting Stations, Hilla).

Bughaila; Al Bughaylah; \*An Numaniyah: Village, 40 km. W Kut al Imara.  $32^{\circ} 32'$  N,  $45^{\circ} 25'$  E.

Busaiya, Al; \*Makhfar al Busayyah; Busiya: Police post, Syrian Desert.  $30^{\circ} 07'$  N,  $46^{\circ} 07'$  E.

Caleh; Calah (see Nimrud).

Chahala, Nahr (see Kahala, Nahr).

\*Chamchamal; Chemchemal: Village, on Kirkuk-Sulaimaniya road.  $35^{\circ} 32'$  N,  $44^{\circ} 50'$  E.

Cora (= Khoran?): Village, near Salahuddin [Reed].

Ctesiphon; \*Taq Kisra: Archeological site, on Tigris, 33 km. S Baghdad, adjacent to village of Salman Pak.  $33^{\circ} 05'$  N,  $44^{\circ} 35'$  E.

Dawr, \*Ad; Daur; Dower: Village, on Tigris, 30 km. N Samarra.  $34^{\circ} 27'$  N,  $43^{\circ} 47'$  E.

\*Dezful (Iran); Dizful: City, in Khuzistan.  $32^{\circ} 23'$  N,  $48^{\circ} 24'$  E.

Dhabbah (see Sened).

Dhibban; Dibban: Habbaniya area, 70 km. W Baghdad.

Diana-Baradust (see Diyana).

Diltawa; Deltawa; Dahltawa; \*Al Khalis; "Tall Tauwa": Town, at southern edge of Al Jazira, 50 km. N Baghdad.  $33^{\circ} 51'$  N,  $44^{\circ} 32'$  E.

Divaniyah; \*Ad Diwaniyah: Town.  $31^{\circ} 59'$  N,  $44^{\circ} 56'$  E.

Diyala; Diala; \*Nahr Diyala (in Iraq); \*Rudkhaneh-ye Sirvan (in Iran): River, entering Tigris 15 km. S Baghdad. Formerly two streams: the Shirvan and the Diyala.  $33^{\circ} 14'$  N,  $44^{\circ} 31'$  E.

Diyana; \*Diyannah; Diana: Village, N Rawanduz.  $36^{\circ} 41'$  N,  $44^{\circ} 35'$  E.

Dohuk; \*Dahuk: Town, 57 km. N Mosul, at edge of hills, on road to Amadiya.  $36^{\circ} 52'$  N,  $43^{\circ} 00'$  E.

Dujail; \*Ad Dujayl (formerly Sumaika): Town, 61 km. by rail N Baghdad.  $33^{\circ} 51'$  N,  $44^{\circ} 14'$  E.

Duwayrij, \*Nahr ad (in Iraq); \*Rud-e Doveyrich (in Iran); Dawairij River; Kharkhara River: Stream, 40 km. NE Amara. Iraq-Iran boundary.  $32^{\circ} 07'$  N,  $47^{\circ} 22'$  E.

Erbil; \*Irbil; Arbil; Arbela: Town, 75 km. E Mosul.  $36^{\circ} 11'$  N,  $44^{\circ} 01'$  E.

Erech (see Uruk).

Eridu: Sumerian archeological site, in desert 24 km. SW An Nasiriya.

Eski Baghdad (see Baghdad, Eski).

\*Euphrates River; \*Firat Nehri (Turk.); \*Nahr al Furat (Arab. long form); \*Al Furat (Arab. short form): River, entering Iraq from Syria, joining Tigris at  $31^{\circ} 00'$  N,  $47^{\circ} 25'$  E to form Shatt al Arab.

Ezra's Tomb (see Azair, Al).

Falluja, Al; Faluja; \*Al Fallujah: Town, on Euphrates, 60 km. W Baghdad.  $33^{\circ} 20' N$ ,  $43^{\circ} 46' E$ .

Fao; \*Al Faw: Town, at mouth of Shatt al Arab, 85 km. SE Basra.  $29^{\circ} 58' N$ ,  $48^{\circ} 29' E$ .

Fatha, Al; \*Al Fatah: Village, on Tigris, 25 km. below Little Zab, near gorge through Jabal Hamrin.  $35^{\circ} 04' N$ ,  $43^{\circ} 34' E$ .

Ghubeir (see Qubair).

Goaja: Forest experiment station, near Sulaimaniya.

Gobain Island: Island in Euphrates, upstream from great bend between Ana and Haditha.

Guli Ali Bagh; Guli Ali Beg (see Qali Ali Beg).

Gutnyeh: Not verified [Swaboda journals].

H-1: Iraq Petroleum Co. pipeline pumping station, in Syrian desert, 85 km. SW Haditha.

H-2: Same, No. 2 of Haifa line, 175 km. SW Haditha.

Habbaniya: Cantonment, N Lake Habbaniya on Al Falluja-Ramadi road.

Habbaniya, Lake; \*Hawr al Habbaniyah: Lake.  $33^{\circ} 17' N$ ,  $43^{\circ} 29' E$  (see List of Collecting Stations).

Haditha; \*Al Hadithah: Village, 55 km. SW Ana.  $34^{\circ} 07' N$ ,  $42^{\circ} 23' E$  (see List of Collecting Stations).

Hais: Village, 10 km. NW Amadiya.

Haj Omran; Haj Ohmran: Village, on Rawanduz-Tehran road at frontier, 8 km. E Rayat.

Hajarah, \*Al: The stony desert of southwestern Iraq.  $30^{\circ} 00' N$ ,  $44^{\circ} 00' E$ .

Hakari Mountains; Hakkiari Highland: The mountain massif of central Kurdistan, partly in Turkey.

Halabja; \*Halabjah: Village, 70 km. SE Sulaimaniya.  $35^{\circ} 10' N$ ,  $45^{\circ} 59' E$ .

Halfayah, \*Al; Markaz al Halfayah: Village.  $31^{\circ} 49' N$ ,  $47^{\circ} 26' E$ .

Hammar, Hor al; \*Hawr al Hammar: Shallow marshy lake, 35 km. E An Nasiriya. Fluctuates greatly in size with seasonal changes in level of Euphrates.  $30^{\circ} 50' N$ ,  $47^{\circ} 10' E$ .

Haqlan, \*Wadi: Canyon, 2 km. N K-3.  $34^{\circ} 05' N$ ,  $42^{\circ} 27' E$  (see List of Collecting Stations, Haditha).

Harir Dagh: Mountain, at Harir, Erbil Liwa. Approximately  $36^{\circ} 27' N$ ,  $44^{\circ} 23' E$ .

Hasa, Haur al; Hasai Lake: Seasonally lake, marsh, or desert, W Euphrates, S Al Falluja.

Hasan adh Dhari, Qalat (see Husain, Qalat).

Hawaiza, Hor al; Hor al Hawza: Marsh.  $31^{\circ} 35' N$ ,  $47^{\circ} 38' E$ .

Hayy, Al (see Kut al Hai).

\*Hazar Mard; Hazar Merd: Twin villages and caves, on Baranand Dagh, 10 km. SW Sulaimaniya. Alt. 4,000 ft.  $35^{\circ} 30' N$ ,  $45^{\circ} 20' E$  (see List of Collecting Stations, Sulaimaniya).

Hilla; \*Al Hillah: City, 90 km. S Baghdad.  $32^{\circ} 29' N$ ,  $44^{\circ} 25' E$  (see List of Collecting Stations).

Hinaijd; \*Al Hunaydi; Camp Rashid: Military post, 10 km. SE Baghdad.  $33^{\circ} 18' N$ ,  $44^{\circ} 28' E$ .

Hindiya; \*Al Hindiyyah; Hindia: Town and barrage, on Tigris, 95 km. S Baghdad.  $32^{\circ} 32' N$ ,  $44^{\circ} 13' E$ .

\*Hit: Town, on Euphrates.  $33^{\circ} 38' N$ ,  $42^{\circ} 49' E$ .

Hor (see proper name).

Howaiza (see Huwayzah).

Humaniah; \*Humayniyah: Village, on Tigris, 72 km. NW Kut al Imara.  $32^{\circ} 49' N$ ,  $45^{\circ} 04' E$ .

Humenich: Not verified [Swaboda journals]. (= Humaniah?)

Hunaydi, Al (see Hinaijd).

Husain, Qalat; \*Qalat Husayn; Qalat Hasan adh Dhari: Village, E bank of Tigris, 65 km. NW Amara. Approximately  $32^{\circ} 20' N$ ,  $46^{\circ} 45' E$ .

Husaineyah, Hor al: Lake, 30 km. NW An Nasiriya.

\*Husamah; Hasamah: Village,  $30^{\circ} 49' N$ ,  $46^{\circ} 31' E$ .

\*Huwayzah; Howaiza; Huwaisah: Village, on Shatt al Arab, 12 km. below Al Qurna.  $30^{\circ} 55' N$ ,  $47^{\circ} 29' E$ .

Imam al Aqr (see Aqr, Imam al).

Irbil (see Erbil).

Jabal (see proper name).

Jalam (= Jahama, on Southern Desert?).

Jamdat Nasr; Jemdet Nasr: Pre-Sumerian archeological site, NE Babylon.

Jarmo: Neolithic site, on Chamchamal plain, 8 km. W Chamchamal.

Jazira, Al ("the island"); \*Al Jazirah; Jazera Desert: The country between Tigris and Euphrates, NW Baghdad and S Zagros mountains.  $35^{\circ} 10' N$ ,  $42^{\circ} 00' E$ .

Jumaimu; Jumaimah: A well, along old An Najaf-Mecca track, at Arabian frontier.

K-1: Iraq Petroleum Co. pipeline pumping station, near Kirkuk.

K-2: Same, No. 2 of Kirkuk line, in Al Jazira, near Baiji.

K-3: Same, No. 3, 5 km. SW Haditha (see List of Collecting Stations, Haditha).

Kadhimain; Kasimani; \*Al Kazimiyah; Kazimain; Khadimain: Town, on Tigris, 5 km. NW Baghdad.  $33^{\circ} 22' N$ ,  $44^{\circ} 20' E$ .

Kahala, Nahr; \*Nahr al Kahla; Nahr Chahala: Canal, SE Amara.  $31^{\circ} 40' N$ ,  $47^{\circ} 18' E$  to  $31^{\circ} 50' N$ ,  $47^{\circ} 10' E$ .

Kalat (see proper name).

\*Kani Mase: Village, 16 km. N Amadiya, close to Turkish frontier.  $37^{\circ} 13' N$ ,  $43^{\circ} 26' E$ .

Kanispika: Village, on Baranand Dagh, 15 km. S Sulaimaniya. Approximately  $35^{\circ} 27' N$ ,  $45^{\circ} 23' E$ .

Kara (see Narwa).

Kara Dagh; Qara Dagh: Mountain ridge, between Kirkuk and Sulaimaniya.  $35^{\circ} 15' N$ ,  $45^{\circ} 20' E$ .

\*Karbala; Kerbela: Town, 80 km. SW Baghdad.  $32^{\circ} 36' N$ ,  $44^{\circ} 02' E$ .

Karim Shahir: Neolithic site, 3 km. from Jarmo, Chamchamal plain.

Karun: River of Persian Mesopotamia, tributary to Shatt al Arab at Mohammerah.

Karyatein (Syria); Karjaten; Kraitein; El Qaryatein; Nezala: Village on Damascus-Palmyra Route.

Kasimani; (see Kadhimain).

Kermanshah (Iran): City.  $34^{\circ} 19' N$ ,  $47^{\circ} 04' E$ .

Khabur: River in Syria (see also next entry). Tributary to Euphrates, approximately parallel to eastern border of Iraq, 80 km. W Sinjar.

Khabur Su: Mountain stream, entering Iraq from Turkey at  $37^{\circ} 22' N$ ,  $43^{\circ} 10' E$ , coursing S, then W, to Zakho, and from there to its confluence with Tigris near Pesh Khabur, forming the frontier.

Khadimain (see Kadhimain).

Khalifa, Beit al: Town, on left bank of Tigris, 2 km. N Samarra.

Khalis, Al (see Diltawa).

Khalis, \*Nahr al: Canal, N Baghdad.  $33^{\circ} 45' N$ ,  $44^{\circ} 30' E$ .

\*Khanaqin; Khanikin: Town and oil field, 140 km. NE Baghdad.  $34^{\circ} 21' N$ ,  $45^{\circ} 22' E$ .

Kharkhara (see Duwayrij, Nahr ad).

Khur-ramshahr (see Mohammerah).

Khuzistan (Iran); \*Khuzestan: Region.  $30^{\circ} 30' N$ ,  $50^{\circ} 00' E$ .

\*Kirkuk: City and oil field, 235 km. N Baghdad.  $35^{\circ} 28' N$ ,  $44^{\circ} 28' E$ .

Kish: Ruin of Sumerian city, near Euphrates, 19 km. E Hilla.

Kuf (see Aqar Quf).

Kufa, Al; \*Al Kufah: Town, 10 km. NE An Najaf.  $32^{\circ} 02' N$ ,  $44^{\circ} 24' E$ .

Kumait, Al; \*Al Kumayt: Village, right bank of Tigris, 35 km. NW Amara.  $32^{\circ} 02' N$ ,  $46^{\circ} 52' E$ .

Kut al Hai; \*Al Hayy: Town, 40 km. SE Kut al Imara.  $32^{\circ} 10' N$ ,  $46^{\circ} 03' E$ .

Kut al Imara; \*Al Kut; "Kut al Amarah": Town. Alt. 55 ft.  $32^{\circ} 30' N$ ,  $45^{\circ} 49' E$ .

\*Kuwait; Kuweit: Shaikhdom, with capital city of same name.  $29^{\circ} 30' N$ ,  $47^{\circ} 45' E$ .

Lasini: Village, 20 km. S Hilla on left bank of Hilla Canal.

Legait (see Luqait, Qalat).

Luqait, Qalat; \*Qalat Luqayt; Lugait; Legait; etc.: Village, S Hor al Hammar.  $30^{\circ} 41' N$ ,  $46^{\circ} 50' E$ .

Madij: Not verified [Cheesman, 1920].

Maidan; \*Meydan: Village.  $34^{\circ} 55' N$ ,  $45^{\circ} 37' E$ .

\*Mandali: Town, 112 km. NE Baghdad, near Iranian frontier. Alt. 380 ft.  $33^{\circ} 45' N$ ,  $45^{\circ} 32' E$ .

Mandaliya: Town, 50 km. E Kut al Imara.

Mansuriya, Al; \*Al Mansuriyah: Village, on left bank of Tigris, 45 km. N Baghdad.  $33^{\circ} 45' N$ ,  $44^{\circ} 24' E$ .

Mansuriya al Shatt: Farm, adjacent to Al Mansuriya (see List of Collecting Stations).

Maqil; \*Al Maqil; Maqil: Seaport and airport, 10 km. N Basra.  $30^{\circ} 33' N$ ,  $47^{\circ} 48' E$  (see List of Collecting Stations, Basra).

Mawsil, Al (see Mosul).

Medaiche: Swamp Arab village, on southern edge of Hor al Hammar, midway between At Tuba and Ar Rumaila.

Mejadin: On Euphrates. Not found [Wettstein, 1913].

Mergashi: Village, 32 km. N Dohuk. Alt. 2,000 ft. [Harrison].

Mergasor; Mergasori; \*Merga Sor-i-zhori: Village and administrative center, northern side of Jabal Baradust.  $36^{\circ} 50' N$ ,  $44^{\circ} 19' E$ .

Meshed Ali (see Najaf, An).

Miqdadiyah, Al (see Shahraban).

Mohammerah (Iran); Mohumrah; now Khur-ramshahr: Town, at confluence of Karun and Shatt al Arab.

\*Mosul; \*Al Mawsil; Al Musil; Moussoul: City. Alt. 980 ft.  $36^{\circ} 20' N$ ,  $43^{\circ} 08' E$ .

Muhammad, Beit; Beit Mohommad: Settlement, 2 km. SE Amara.

Muntafiq, \*Al: Liwa.  $31^{\circ} 00' N$ ,  $46^{\circ} 00' E$ . Also tribe of An Nasiriya area.

Muqaiyir, Tall al (see Ur).

Museyib; \*Musayyib: Town, on Euphrates.  $32^{\circ} 47' N$ ,  $44^{\circ} 18' E$ .

"Muskyay-yar" (= Tall al Muqayyar; see Ur).

"Nachr-Chasasch": Probably Nahr-Chasaseh, near Hor al Hammar.

Nahr (see proper name).

Nahrwan Canal: Ancient canal, paralleling Tigris from Fatah Gorge to Kut al Imara.  $33^{\circ} 30' N$ ,  $44^{\circ} 36' E$ .

Najaf, \*An; Nejef; Nedjef; Meshed Ali: Village, 145 km. S Baghdad.  $31^{\circ} 59' N$ ,  $44^{\circ} 20' E$ .

Namrud (see Borsippa).

Narwa; Kara: Village, 25 km. E Amadiya. Approximately  $37^{\circ} 05' N$ ,  $43^{\circ} 47' E$ .

Nasiriya, An; \*An Nasiriyah: Town, 160 km. NW Basra.  $31^{\circ} 02' N$ ,  $46^{\circ} 16' E$ .

Negoub: Not verified [Layard, 1859].

Nij (Syria): See section on elephants in text.

\*Nimrud; Caleh; Calah: Ruins, of Assyrian capital city, 32 km. S Mosul.  $36^{\circ} 06' N$ ,  $43^{\circ} 20' E$ .

Nimrud, Birs (see Borsippa).

\*Nineveh: Ruins, of Assyrian city, opposite modern Mosul.  $36^{\circ} 22' N$ ,  $43^{\circ} 09' E$ .

Nippur: Ruins, of Sumerian city, then on Euphrates. 32 km. ENE Diwaniya.

Numaniyah, An (see Bughaila).

\*Poshtkuh (Iran); Pusht-i-kuh: Mountain range.  $32^{\circ} 48' N$ ,  $47^{\circ} 12' E$ .

Qaim, \*Al; "El Gaim": Village, on Euphrates, 75 km. W Ana, near Syrian frontier.  $34^{\circ} 21' N$ ,  $41^{\circ} 07' E$ .

Qalat (see proper name).

\*Qali Ali Beg; Guli Ali Bagh; Guli Ali Beg: Village.  $36^{\circ} 38' N$ ,  $44^{\circ} 25' E$ .

Qosh, Al; \*Alqosh; Al Kosh: Village, 45 km. N Mosul.  $36^{\circ} 44' N$ ,  $43^{\circ} 06' E$ .

Qubair; \*Qubayr; Ghubeir: Settlement, 70 km. E Kut al Imara.  $32^{\circ} 30' N$ ,  $46^{\circ} 35' E$ .

Qurna, Al; \*Al Qurnah: Town, at confluence of Tigris and Euphrates.  $31^{\circ} 00' N$ ,  $47^{\circ} 26' E$ .

Racca (Syria); Raqqa; Rakka: Village, left bank of Euphrates. Approximately  $36^{\circ} 00' N$ ,  $39^{\circ} 00' E$ .

\*Rahamla; "Rhamalla": Village, on rail line, 16 km. E Khanaqin.  $34^{\circ} 22' N$ ,  $45^{\circ} 17' E$ .

Ramadi, \*Ar; Ramadi: Town, on Euphrates, between Hit and Al Falluja. Post of entry from Syria and Jordan.  $33^{\circ} 25'$  N,  $43^{\circ} 17'$  E.

\*Ramhormoz (Iran); Ram Hormuz: Town.  $31^{\circ} 16'$  N,  $49^{\circ} 36'$  E.

Rashid, Camp (see Hinaidi).

Rawa; \*Rawah: Village, left bank of Euphrates, opposite Ana.  $34^{\circ} 28'$  N,  $41^{\circ} 55'$  E.

\*Rawanduz; Rawandus; Roandiz; Rowandooz; Ruwandiz; etc: Town and gorge, 135 km. E Mosul.  $36^{\circ} 37'$  N,  $44^{\circ} 31'$  E.

Rawebyah (see Rubaiya).

\*Restink: Settlement and summer resort, on Mosul-Amadiya road.  $37^{\circ} 02'$  N,  $43^{\circ} 14'$  E. "Rhamalla" (see Rahamla).

Rubaiya; Rawebyah; \*Rubayyah: Village, on Tigris, 25 km. S Amara.  $31^{\circ} 38'$  N,  $47^{\circ} 10'$  E.

Rud-e Doveyrich (see Duwayrij, Nahr ad).

Rumaila, Ar; \*Ar Rumaylah: Settlement, on southern edge of Hor al Hammar, 50 km. W Basra.  $30^{\circ} 35'$  N,  $47^{\circ} 17'$  E.

Rutba; \*Ar Rutbah; Rutba Wells: Village, 400 km. W Baghdad.  $33^{\circ} 02'$  N,  $40^{\circ} 17'$  E.

Saad, Shaikh (see Shaikh Saad).

Safin Dagh: Mountain at Shaqlawa.

Salahuddin: Summer resort, between Erbil and Shaqlawa.

\*Salih, Qalat; Khalat Shadi: Town, left bank of Tigris, 40 km. S Amara.  $31^{\circ} 31'$  N,  $47^{\circ} 16'$  E.

\*Salman Pak; Sulman Pak: Village, by ancient Ctesiphon.  $33^{\circ} 06'$  N,  $44^{\circ} 35'$  E.

\*Samarra: Town, 115 km. NW Baghdad.  $34^{\circ} 12'$  N,  $43^{\circ} 52'$  E.

Samawa; \*As Samawah: Town, on Euphrates, 245 km. S Baghdad.  $31^{\circ} 18'$  N,  $45^{\circ} 17'$  E.

Sanaf, Hor: Marshes, E Amara.

Sanam, \*Jabal: Isolated rocky hill, with sand dunes, near Kuwait frontier, 46 km. SW Basra. Alt. 503 ft.  $30^{\circ} 08'$  N,  $47^{\circ} 37'$  E.

Sanniya, Hor As: Marshy lake, between Amara and Kut al Imara.  $31^{\circ} 55'$  N,  $46^{\circ} 48'$  E.

\*Sanniyat; Saniyat; Sunniyat: Region, E Kut al Imara. In 1916 a town on Tigris.

$32^{\circ} 37'$  N,  $46^{\circ} 02'$  E.

Sarsank; Sarsang; Sarsing; Sarsink; Sersink; Sirsink: Sursang: Settlement. Approximately  $37^{\circ} 03'$  N,  $43^{\circ} 15'$  E (see List of Collecting Stations).

Seajafla: Not verified [Swaboda journals].

Seleucia: Ruin, opposite Ctesiphon, on Tigris.

Sened; Dhabbah; Bani Tal: Settlement, on right bank of Euphrates, 23 km. below Al Falluja.

Ser (see proper name).

Seri Hassan Bey: Mountain, in Rawanduz area.

Shadi, Khalat (see Salih, Qalat).

Shahraban; \*Al Miqdadiyah: Village, on left bank of Diyala River, 90 km. NE Baghdad.  $33^{\circ} 59'$  N,  $44^{\circ} 56'$  E.

Shaikh Falih as Saihud's camp: Nahr Kahala area, western fringe of the southern marshes, 30 km. SE Amara.

Shaikh Saad; \*Shaykh Sad: Village, right bank of Tigris, 40 km. E Kut al Imara.  $32^{\circ} 34'$  N,  $46^{\circ} 17'$  E.

Shamiya, Al (see Syrian Desert).

Shanidar Cave: Paleolithic site, in Rawanduz area, 4 km. from Shanidar village and 2.8 km. from Great Zab [Solecki, 1953, 1955]. Approximately  $36^{\circ} 50'$  N,  $44^{\circ} 05'$  E.

Shaqlawa; \*Shaqlawah: Village, 35 km. SW Rawanduz.  $36^{\circ} 23'$  N,  $44^{\circ} 18'$  E.

Sharqat, Qalat; Kalat Schergat; \*Ash Sharqat: Settlement, on Tigris, 44 km. S Great Zab.  $35^{\circ} 27'$  N,  $43^{\circ} 16'$  E.

Shatra; \*Ash Shatrah; Shatrat al Muntafiq: Village, 45 km. N An Nasiriya.  $31^{\circ} 25'$  N,  $46^{\circ} 10'$  E.

Shatt (see proper name).

Shedif: Not verified [Swaboda journals].

Shejar: Not verified [Swaboda journals].

Shinafia; \*Ash Shinafiyah: Settlement, near marshes on a channel of Euphrates, SW Diwaniya.  $31^{\circ} 35'$  N,  $44^{\circ} 39'$  E.

Shiraz (Iran): City, southern Zagros.  $29^{\circ} 36'$  N,  $52^{\circ} 32'$  E.

Shuaiba; \*Ash Shuaybah: Village, 19 km. SW Basra.  $30^{\circ} 26' N, 47^{\circ} 40' E$ .

\*Shushtar (Iran): Town.  $32^{\circ} 03' N, 48^{\circ} 51' E$ .

Sihaniyah: Police post, NW Mosul Liwa.

\*Sinjar; Balad Sinjar: Village, 105 km. W Mosul.  $36^{\circ} 19' N, 41^{\circ} 52' E$ .

\*Sinjar, Jabal: Mountain, immediately N Sinjar. Alt. 4,781 ft.  $36^{\circ} 23' N, 41^{\circ} 52' E$ .

Sinn Abtar; Sinn Banks: Hills (?), SE Kut al Imara.

Sirwan River: \*Rudkhaneh-ye Sirwan; Diyala River above Khanaqin: Stream,  $33^{\circ} 14' N, 44^{\circ} 31' E$ .

Sulaimaniya; Suleimania; \*As Sulaymaniyah: City, 230 km. SE Mosul. Alt. 2,750 ft.  $35^{\circ} 33' N, 45^{\circ} 26' E$  (see List of Collecting Stations).

Sulman Pak (see Salman Pak).

Sumaika; Sumaykah; Sumaicha ("little fish") (see Dujail).

Sunniyat (see Sanniyat).

\*Syrian Desert; \*Badiyat ash Sham; Western Desert; Al Shamiya; Shamiya Desert: The desert on the Damascus (Sham) side of Euphrates.

T-1: Iraq Petroleum Co. pipeline pumping station, W Haditha.

T-2: Same, No. 2 of Tripoli line, in Syria, about 100 km. W Al Qaim.

Taaj, Fort: A nineteenth-century location on Tigris. (= Taji, 20 km. NW Baghdad?)

Tall al Muqayyar (see Ur).

"Tall Tauwa" (see Diltawa).

Tanumah, \*At: Village, on E bank of Shatt al Arab, opposite Basra.  $30^{\circ} 32' N, 47^{\circ} 50' E$ .

Tekrit; \*Tikrit: Village, on Tigris, 155 km. NW Baghdad.  $34^{\circ} 36' N, 43^{\circ} 42' E$ .

Tel Asmar: Early dynastic site, Diyala region.

Tell Halaf: Early archeological site, near Nisibin on Turko-Syrian frontier.

Tepe Gawra: Archeological site, 25 km. NE Mosul.

\*Tigris River; \*Nahr Dijlah (Arab.); \*Dicle Nehri (Turk.): River, entering from Turkey at Pesh Khabur and meeting Euphrates at Al Qurna.

Tinn: Village, 3 km. SW Bermaneh, Kurdistan.

Tuba, At; \*At Tubah; Tubat: Settlement, 30 km. W Basra.  $30^{\circ} 28' N, 47^{\circ} 30' E$ .

Twin Canals: Village, SE Kut al Imara.

Tyb, \*Shatt el; \*Nahr at Tib; Maimah Tib: River, N Amara.  $32^{\circ} 05' N, 47^{\circ} 16' E$ .

Ubaid, Al: Ruin, near Ur.

Umm al Kaheb: Not verified [Field, 1954].

Uqhaidhir; \*Ukhaydir; Ukhaidhir: Ruin, in desert, 43 km. W Hilla.  $32^{\circ} 26' N, 43^{\circ} 36' E$ .

Ur; Ur of the Chaldees; \*Tall al Muqayyar ("mound of pitch"); Tall al Muqaiyr; "Muskey-yar": Sumerian ruin, 15 km. SW An Nasirya.  $30^{\circ} 58' N, 46^{\circ} 06' E$ .

Uruk; Erech; \*Tall al Warka: Ruin, of Sumerian city, at site of present Warka, 65 km. WNW An Nasirya.  $31^{\circ} 19' N, 45^{\circ} 39' E$ .

Uzaym, Nahr al (see Adhaim, Shatt al).

Uzayr, Al (see Azair, Al).

Warka, Tall al (see Uruk).

Zab, \*Great; Nahr az Zab al Kabir (Arab.); Rudbar-i-Zei (Kurd.): Stream, 40 km. S Mosul.  $36^{\circ} 00' N, 43^{\circ} 21' E$ .

Zab, \*Little; Nahr az Zab as Saghir (Arab.); Rubber-i-Kalwi (Kurd.): Stream, 125 km. S Mosul.  $35^{\circ} 12' N, 43^{\circ} 25' E$ .

Zagros Mountains: The major mountain arc bounding Iraq to east and north.

Zakho; \*Zakhu: Town, on Khabur Su, 10 km. from Turkish frontier, 95 km. NW Mosul.  $37^{\circ} 08' N, 42^{\circ} 41' E$ .

Zawitha; Ziwita: Settlement, in pine zone NE Dohuk. Approximately  $36^{\circ} 55' N, 43^{\circ} 12' E$ .

Zawiya: Town, 30 km. SE Kut al Imara.  $32^{\circ} 15' N, 45^{\circ} 57' E$ .

Zhargahta, Jabal; Sugrimah Dagh; Saggirma Dagh: Eastern Kirkuk Liwa.

Zubair, Az; \*Az Zubayr: Town, 19 km. SW Basra.  $30^{\circ} 23' N, 47^{\circ} 43' E$ .

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Xenophon

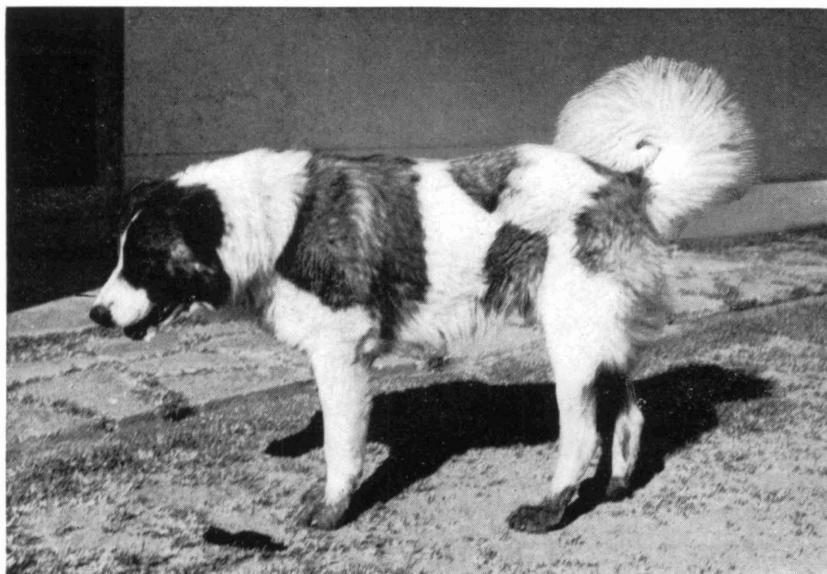
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PLATES

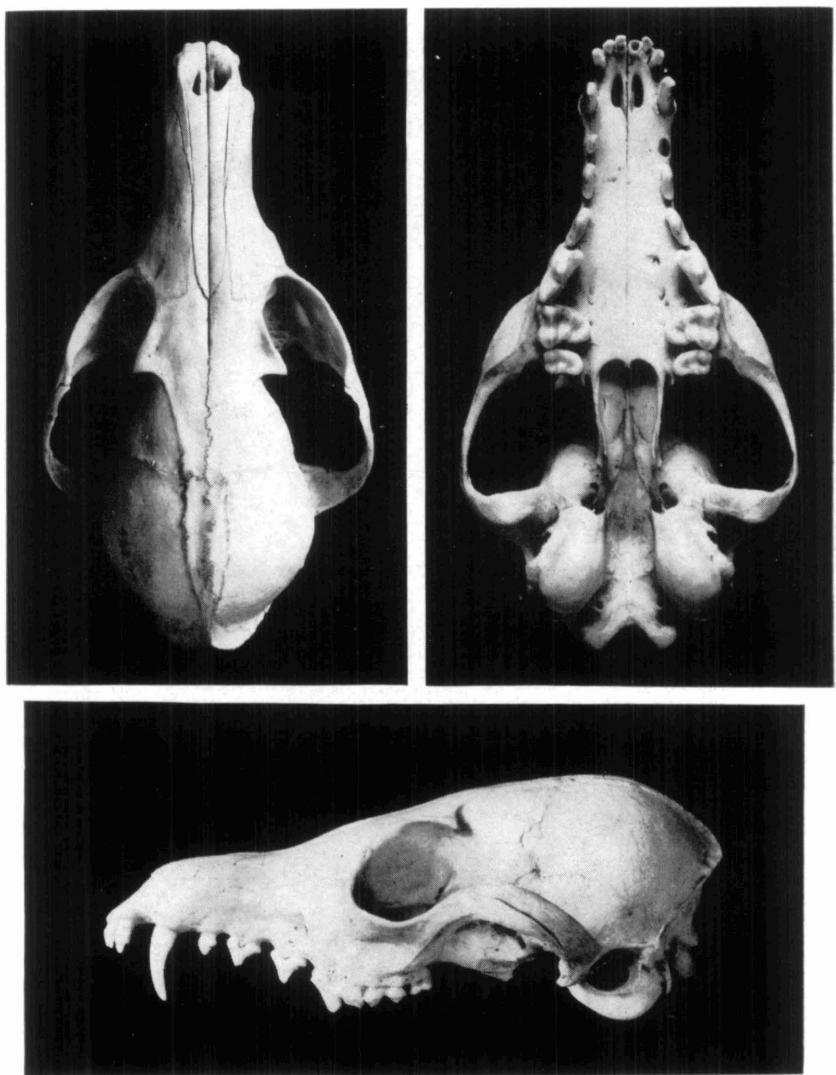


PLATE I



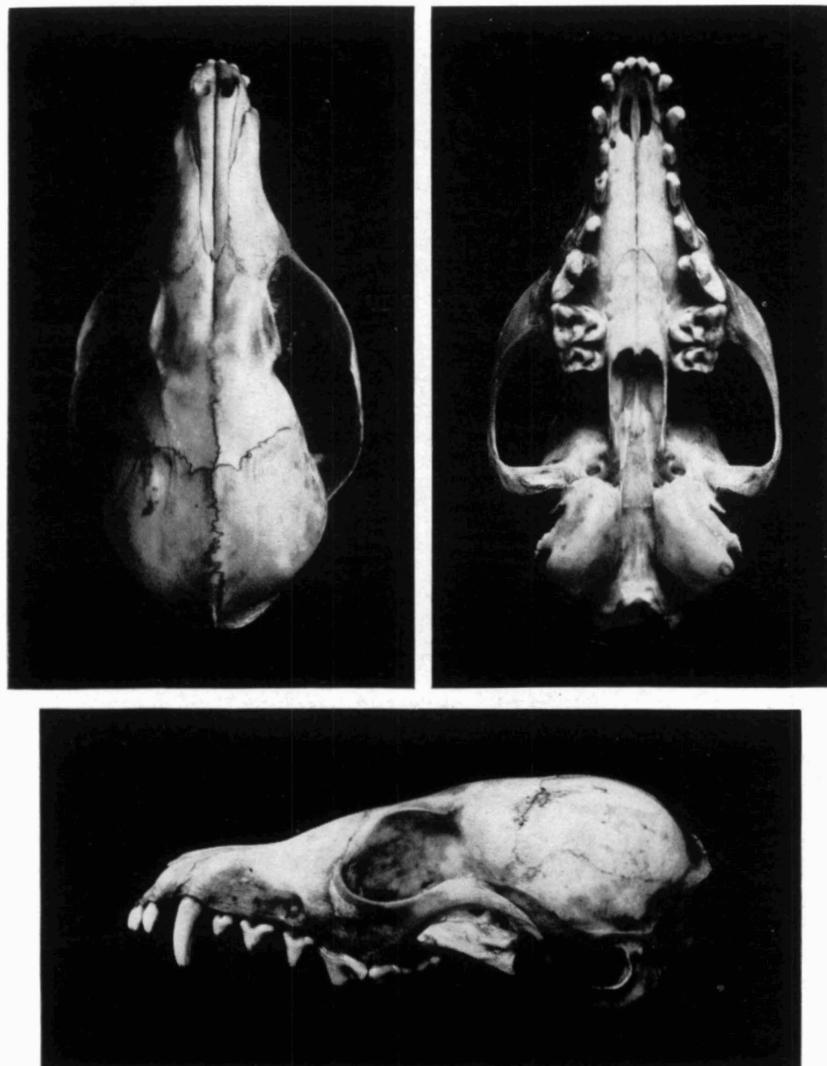
Kurdish guard dog, adult male. Sarsank, Mosul Liwa, 1952. Large size, long hair, and curled tail are characteristic.

PLATE II



*Vulpes vulpes pusilla*, adult male (?). Pipeline station T-1, Iraq. CNHM 43297  
Cranium: upper left, normadorsalis; upper right, normaventralis; lower, normalateralis.  
Photographs by Luis de la Torre.

PLATE III



*Vulpes rüppelli sabaea*, adult male. Haditha. INHM 80. Cranium: upper left, normadorsalis; upper right, normaventralis; lower, normalateralis. Photographs by Luis de la Torre.

PLATE IV



Young gazelle. Hilla, 1953.

PLATE V



*Spalax leucodon*, recently killed male. Sarsank, 1952.

PLATE VI



FIG. 1. Rock strata, Sarsank, 1952. *Sciurus anomalus* and *Apodemus mystacinus* were taken here.

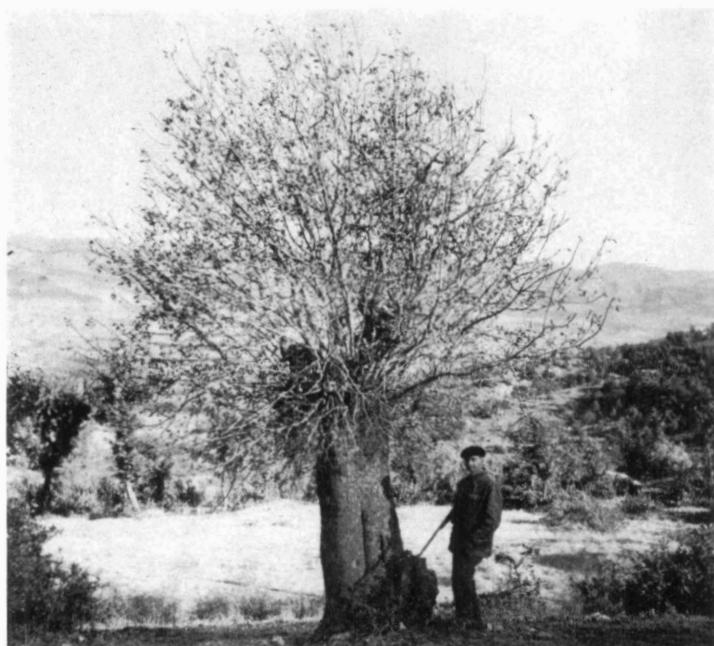


FIG. 2. Open forest, near Sarsank, 1952. Trees such as this one are regularly trimmed for firewood.

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